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DR. ARNOLD THEILER, C.M.G.

No man has done more to elucidate the problem of the animal diseases of South Africa than Dr. Arnold Theiler, and nowhere in the world is there to be found a laboratory which is better equipped than the one in which Dr. Theiler works at Pretoria.

Born in Switzerland in 1867, Mr. Theiler studied veterinary science in Zurich, obtaining from there his license to practice, and afterwards obtaining the degree of Doctor in the Veterinary Faculty of the University of Berne.

Travelling to South Africa in 1891, Dr. Theiler practised for a time in Pretoria, and it was then that he saw the great necessity for a scientific study of the animal diseases of the country. In 1893 he was appointed Director of the Johannesburg Vaccine Institute, and subsequently of the Mines Sanitation Department, and the Johannesburg Sanitary Board. In 1896 he became Veterinary Adviser of the late Republican Government, and in 1898 also took over the military duties of Veterinary Officer to the Staats Artillery. In 1900 the New Administration reappointed Dr. Theiler as Veterinary Bacteriologist, and since then until the present time every opportunity for quiet, steady work has been grasped, with results which are known all over the civilized world. His name is known and respected everywhere, and at the International Congresses of Baden-Baden in 1899, and Buda Pesth in 1905, Dr. Theiler was selected to personally represent his Government. The Home Government appreciation of his valuable services was shown by the order of the C.M.G., which was conferred on him in 1907, and during the present year still further honours have fallen on his shoulders, in that the Royal College of Veterinary Surgeons have made him an Honorary Associate, and the British Association awarded him the first medal and grant which has ever been made "for the advancement of science in South Africa." It is scarcely necessary to say that the last is a very great honour, and the veterinary profession in England, and in

Switzerland, heard with much pride of the tribute conferred upon their learned colleague.

Amongst other scientific qualifications, Dr. Theiler has been elected Vice-President of the newly-formed Royal Society of South Africa; he is a "membre correspondent de la Société Centrale de Médecine Vétérinaire," and "membre associé de la Société de Pathologie Exotique."

That he may live long to continue the good and valuable work he has embarked upon is the sincere wish of all his veterinary colleagues.

Editorial.

FOOT-AND-MOUTH DISEASE IN THE UNITED STATES.

An outbreak of foot-and-mouth disease, wherever it may occur, must always be regarded as a very serious matter. In England our attention has been suddenly called to the dangers of this disease by the issue of orders by the Board of Agriculture prohibiting the landing of live stock in this country from the States of Pennsylvania, New York, New Jersey, Maryland, and Delaware. The report has been confirmed that foot-and-mouth disease has broken out in Pennsylvania and Maryland, and, if it has not already done so, there is grave suspicion that it may quickly spread to the other States named. Foot-and-mouth disease soon makes its presence known, and consequently there is every prospect of its being taken well in hand in the early stages, before it can have spread indefinitely without being observed. The Bureau of Animal Industry is so well organized and equipped that there is every prospect of the outbreak being rapidly stamped out. It has been pointed out that it is unlikely for a shortage of the meat supply to occur, since most of the cattle brought over come from the Western States. All that is necessary is to change the route and port of embarkation, and, even if it should be unfortunately necessary to extend the embargo to all the United States ports, the animals may still be slaughtered there, and the carcases alone shipped.

The outbreak has thrown an enormous amount of extra work on the officials at the landing ports, for they have not only to pay more attention to detail of inspection, but also to have

complete arrangements made, so that if a case should unfortunately crop up they will be fully prepared to cope with it, and to prevent the possibility of its spread to our own flocks and herds.

Those agriculturists who some time ago did all they possibly could to get the Board of Agriculture to remove the restrictions on the importation of store cattle must now admit the wisdom of the Board's refusal to adopt their wishes. The Board of Agriculture and Fisheries is to be congratulated on their foresight, and also on the promptness of their action in issuing restrictions against the importation of live cattle, even for slaughter at the ports, from infected and possibly dangerous areas. Hay and straw are well known as media for the conveyance of infection; therefore, it will occasion no surprise that these articles of fodder have been scheduled by the Foreign Hay and Straw Order of 1908.

General Articles.

DERMANYSSIC ACARIASIS.

BY A. W. NOËL PILLERS, M.R.C.V.S., F.Z.S.

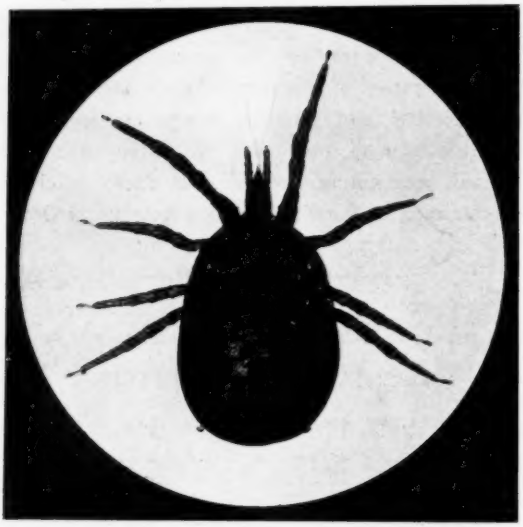
HAVING recently come across the above condition in the pigeon loft of Mr. H. Thompson, M.R.C.V.S., I give here a short description of the parasite, and also a few notes on the disease as gathered from him.

The parasite is usually classified as follows:—

Sub-kingdom	... ...	*Arthropoda.*
Class	... ...	*Arachnida.*
Natural order	... ...	*Acarina.*
Family	... ...	*Gamasidæ.*
Genus	... ...	*Dermanyssus.*
Species	... ...	*Dermanyssus gallinæ.*

It will be gathered from the above that the parasite is a small tick. The fowl Dermanyssus has a soft integument and the body is oval pear-shaped, the posterior extremity being the larger. The legs, eight in number, are composed of five articles, and the distal article has a well-marked appendage. The abdomen is margined by little bristles, which, however, are easily lost in the process of mounting on a microscopic slide, and therefore are not visible in the accompanying photograph. The general colour varies according to the state of engorgement; thus when nearly empty it is a yellowish white, and when fully distended is a dark-brown or red; this latter colour accounts for the name given to it by fanciers, viz., "the red mite." The body of the male is ·6 mm. long and ·3 mm. broad, whilst the female is a

little larger. The female is differentiated from the male by the cheliceral projecting from the rostrum in the form of a long stylet. The eggs are oval in shape and are deposited on waste material; several were seen whilst the parasites were under observation in a test-tube. Dermanyssi have been found on swallows, turkeys, and various other birds, hence the specific distinctions—*D. hirundinis*, *D. gallopavonis*, and *D. avium*—but Neumann (Macqueen's edition points out that these must be disregarded, as the bulk of the evidence is in favour of a single species, viz., *D. gallinæ*.



Dermanyssus gallinæ x 50 diameter.

The parasite is found in fowl-houses and pigeon-lofts and rests by day in dark cracks and crevices, and under the nests. At dusk it can be seen as a dark spot crawling about on the walls and nesting pans. The young birds are attacked about the head and neck and a prick similar to that made with a pin is left as a lesion; from repeated attacks the young birds may become unthrifty. From the neck of the squeakers the parasites are transferred to the legs and under parts of the adult birds, thus it is that the parents refuse to cover their young by night, and although properly fed, youngsters often die of cold. It is in this way that the parasite may cause great losses in a valuable loft. Old birds can be seen to shake when the red mites bite them.

The steps employed by fanciers for getting rid of the parasite are as follows:—The lofts are first cleared of all fixtures, such as boxes, feeders, and pans, then thoroughly cleaned of excreta and dirt, and then a washing in boiling water is given as thoroughly as possible. Solutions of creolin and other coal-tar disinfectants are applied to the

cracks and crevices, and a final white-washing finishes the loft. The articles which have been removed are treated in the same way; the nesting pans are usually boiled and then washed in creolin solution, sawdust with a good proportion of pyrethrum, is placed in the bottom, and a few twigs on the top. This is the natural nesting material for pigeons, and straw is to be condemned. When the squeakers are about ten days old, this process is repeated, and a little later pyrethrum may be applied to the squeakers' backs.

Persons plucking affected birds are sometimes attacked about the arms, but the effects soon pass off. On uncleanly peasants on the Continent the parasites have also been found.

An interesting point is that during its nightly ramblings the parasite sometimes attacks horses; this has often been seen when there is a pigeon-loft above the stable. They cause considerable annoyance to horses by pricking the skin and sucking blood, and the lesion on the next day gives the animal a "flea-bitten" appearance. This condition, when rubbed from irritation, may be mistaken for sarcoptic mange, ringworm, and lousiness.

I am indebted to Mr. A. L. Sheather, M.R.C.V.S., for the photo-micrograph.

THE RELATION OF BOVINE TO HUMAN TUBERCULOSIS.[1]

BY DR. VAN ES, NORTH DAKOTA.

The discovery of the bacillus tuberculosis by Koch in 1882, and its constant association with tuberculosis of all species naturally resulted in the doctrine of the intercommunicability of the disease. Supported by numerous instances in which man apparently contracted tuberculosis from cattle, the disease in the food-producing animals soon came to be regarded as one of the sources of human tuberculosis, and in many places measures of various kinds were taken to prevent infection by animal food stuffs. Several investigators, however, began to find differences in the morphology, cultural characteristics and virulence of bovine and human bacilli. The most radical views were expressed by Koch himself, who in July, 1901, before the British Congress on Tuberculosis stated that in his opinion bovine and human tuberculosis are specifically distinct, and that all measures tending to prevent the transmission of tuberculosis from cattle to man could be safely dispensed with. In fact, he expressed the view that bovine and human tuberculosis could be differentiated by injecting the suspected material into cattle. If tuberculosis be thus produced, the bacilli are of bovine origin; if not, the contrary is the case.

It is needless to say that this statement, coming from the foremost authority on tuberculosis, at once led to the making of numerous investigations, in order to prove or disprove the truth of this announcement of Koch.

The question of identity of the tuberculoses of the various species of animals was thus made the subject of a series of investigations by the Imperial Health Office of Germany. Kossel and Weber, by

[1] Bulletin, North Dakota Government Experiment Station.

whom those investigations were made, report a number of conclusions, among which the following relate to bovine and human tuberculosis :—

"Among the bacilli of mammalian tuberculosis two types can be recognized, which for the sake of convenience are designated as the human type and the bovine type.

"A change of the bacilli from the human type to the bovine type after transmission to rabbits, goats, or cattle could not be observed even after the bacilli remained in the bodies of the animals mentioned for a long period (for more than one year).

"From eleven different cases of bovine tuberculosis the bovine type of bacilli was cultivated without exception. A progressive tuberculosis of cattle was not obtained by the infection with the human type of bacilli, no matter if the transmission was made by inoculation (pure cultures and ground-up pieces of organs), by ingestion (pure cultures and tuberculous sputum), or by inhalation (pure cultures).

"In seven cases of tuberculosis of swine bacilli of the bovine type were found. Accordingly pigs were infected without exception by the transmission of bacilli of the bovine type through the digestive tract.

"The investigations have thus far not yielded proof of the supposition that under natural conditions infection of swine takes place by tubercle bacilli of the human type. In the meantime feeding experiments with pigs, and in which large quantities of bacilli (pure cultures) were used, have shown that the bacilli of the human type are capable of producing in swine a chronic generalized tuberculosis.

"In sixty-seven different cases of human tuberculosis in the selection of which the special purpose of finding the bovine type was principally kept in mind, the bacillus of the human type was demonstrated in fifty-six cases, the bovine type alone in nine cases, and both types together in the same individual in two cases.

"Among the fifty-six cases of human tuberculosis in which only bacilli of the human type were demonstrated, there were found cases of tuberculosis of the lungs, the lymphnodes, the bones and articulations, the intestines and mesenteric lymphnodes, the genito-urinary apparatus, the peritoneum, as well as general miliary tuberculosis and lupus.

"The bacilli of the human type were found in the sputum, the cervical, bronchial and axillary lymphnodes, the tubercles of the lungs, the brain, the mucosa of the tubes, the peritoneum, the intestinal mucosa, the mesenteric lymphnodes, pieces of tuberculous skin, bones and joints, and in the urine.

"The age of the patients was varying.

"The nine cases of human tuberculosis in which only bacilli of the bovine type were found, occurred exclusively in children up to 8 years, and six of the cases presented phenomena which with certainty permitted the conclusion that the infection came about by the introduction of the tubercle bacilli through the intestine. In two of those cases a general miliary tuberculosis was present. In a third case of miliary tuberculosis it was not possible to decide in regard to the entrance of infection. Two cases consisted of tuberculosis of the cervical lymphnodes.

"In the majority of these cases the bacilli of the bovine type could be shown at the point of entry or in the corresponding lymphnodes (intestines, mesenteric, and cervical lymphnodes, in one case of

miliary tuberculosis in the lung, the only organ which could be examined; in a second case of miliary tuberculosis, in the brain, the bronchial lymphnodes, the liver, and in the mesenteric lymphnodes).

"The two cases in which both types of tubercle bacilli were present at the same time occurred in a woman, aged 30, and in whose mesenteric lymphnodes the bovine type was found along with the human type, and in a child aged 5½, in whom tubercle bacilli of the bovine type were found in the mesenteric lymphnodes and bacilli of the human type in the spleen.

"Altogether, there were examined twelve cases of tuberculosis in children under 10 years, and in whom the intestine had apparently served as port of entrance.

Of those twelve cases, five were due to infection with bacilli of the human type alone, six to bacilli of the bovine type alone, and one to infection with bacilli of both types.

"Among the twelve cases there are four in whom tuberculosis was limited to the mesenteric lymphnodes; of those four cases, three were due to infection with bacilli of the bovine type, and one to infection with bacilli of the human type.

"In two other cases, tuberculous intestinal ulcers were present along with the disease of the mesenteric lymphnodes; one of those was due to infection with bacilli of the bovine type, and the other to those of the human type.

"In the remaining six cases there was also tuberculous changes in (other parts of) the body. In five of those cases it was a general miliary tuberculosis, which apparently started from the intestine; three of those were due to infection with bacilli of human type, and two to infection with bacilli of the bovine type. In one case, bacilli of the bovine type were cultivated from the mesenteric lymphnodes, and bacilli of the human type from the spleen.

"The bacilli of the bovine type cultivated from the human body could neither by their morphology, their cultures, or their virulence in cattle be distinguished from bacilli of the bovine type grown directly from cattle.

"As source of the infection of cattle must be considered almost exclusively, such bovines as are suffering from tuberculosis of the udder, the intestines, the uterus, or the lungs, and which eliminate tubercle bacilli with the milk, the intestinal contents, and the secretions of the uterus or air passages.

"The infection of bovines as a result of the introduction of tubercle bacilli of the bovine type, which are eliminated in tuberculous diseases of other domestic animals, *i.e.*, sheep, goats, and swine, is possible.

"A tuberculous man, in rare cases in which he eliminates bacilli of the bovine type, constitutes a danger to cattle.

"In tuberculous swine, almost exclusively tubercle bacilli of the bovine type are found in the diseased foci.

"Tuberculosis of swine originates from bovine tuberculosis especially, but aside from this, transmission from one hog to another occurs. Nor is the transmission of tuberculosis of other domestic mammalia and fowls to swine excluded.

"Tuberculous man can communicate the disease to swine, no matter what the origin of his own disease may be.

"The secretions and parts of the body of diseased mammalia,

and in which living tubercle bacilli are contained, must be considered as the principal source of infection. The greatest danger consists in the feeding of separator residue from creameries to hogs.

"Tuberculosis of the other domestic animals is in most cases derived from tuberculosis of cattle.

"It is to be expected that the campaign against bovine tuberculosis will lead to a reduction of tuberculosis in swine and the other domestic mammalia.

"In tuberculous parts of man the tubercle bacilli of the human type is mostly found.

"It must be accepted that the infection with tuberculosis takes place by a direct transmission of tubercle bacilli from man to man.

"Accordingly, the measures intended for the restriction of tuberculosis must by preference be directed against the direct and indirect transmission of the germs from tuberculous to healthy persons.

"Besides the possibility that with the meat of tuberculous swine, tubercle bacilli of the human type can be transmitted to man, has to be reckoned with.

"The fact that in a number of cases tubercle bacilli of the bovine type were demonstrated in tuberculous lesions of man, shows that the human body is liable to infection by the germs from tuberculous secretions (milk) or tuberculous meat of the domestic mammalia.

"In a conspicuous number of cases in which the tubercle bacilli of the bovine type produced lesions in man, those remained confined to the point of entrance of the germs and the corresponding lymphnodes, or to the latter alone. However, tubercle bacilli of the bovine type were also found in such cases in which the disease had extended away from the point of entrance to more remote parts of the body, and had caused the death of the person involved.

"Therefore, the use of foodstuffs derived from tuberculous animals, and containing living tubercle bacilli of the bovine type, must not, in reference to the health of people, especially during childhood, be regarded without hesitation.

"A conscientiously conducted meat inspection offers a considerable protection against the transmission of tubercle bacilli to man by means of meat; besides, protection is secured by suitable preparation of the meat (through cooking and roasting)."

"The possibility of the transmission of tubercle bacilli to man with the milk and dairy products is considerably reduced by an active campaign against bovine tuberculosis. The tubercle bacilli contained in the milk may be killed by sufficient heating."

Damman and Muessemeier, who also conducted experiments with a view to obtain data on the relation of bovine and human tuberculosis, sum up their work with the following conclusions:—

(1) "On account of the morphologic and biologic behaviour of the strains of tubercle bacilli studied by us, we are not able to distinguish between two strictly distinct types, having no intermediary types like one of the bacilli of human origin, and the other of the other mammalia, or such as a human type and a bovine type.

(2) "The inoculation of guinea-pigs with the strains of tubercle

bacilli studied by us has not yielded a real and constantly present difference in action.

(3) "We could produce tuberculosis in rabbits with tubercle bacilli of human as well as with those of animal origin. The latter, however, proved themselves more virulent for rabbits than the former, as a rule.

(4) "The virulence of tubercle bacilli of human strains, which in rabbits were slightly virulent, could be increased by passing them through rabbits.

(5) "We were able to produce tuberculosis occasionally also in the form of 'pearl disease' by the feeding and inoculation with strains of tubercle bacilli of man, as well as with those of cattle in cattle, sheep, and swine. As a rule, the strains of tubercle bacilli derived from cattle were more virulent for cattle, sheep, and swine, than the strains obtained from the human body.

(6) "It was possible for us to change morphologically and biologically a human strain of tubercle bacilli by a repeated passage through goats, and to increase its virulence to such an extent, by a five times repeated passage through goats, that it was capable of causing severe tuberculosis in a calf and in a hog.

"Considering, moreover, that tuberculosis and pearl disease are processes which histologically are identical, we arrive at the conclusion that:—

(1) "Tubercle bacilli of man and the other mammalia are not to be considered as separate, specifially distinct species, but as varieties adapted to the systems of the different animal species.

(2) "Measures for the protection of man against infection with animal tuberculosis are indispensable."

In addition to the conclusions reached by the above-mentioned investigators, the results of other scientists are of a similar nature, and numerous cases are on record in which tuberculosis was apparently transmitted directly from bovine to man.

In view of the evidence which we now possess, it is safe to conclude that while, without doubt, human tuberculosis is, in the great majority of cases, transmitted from man to man, the exclusion of meat and milk of tuberculous animals as articles of food for man, and especially for children, is a sanitary measure, warranted as well as rational.

THE MEAT INDUSTRY IN HUNGARY.

BY LOUDON M. DOUGLAS, LECTURER ON THE MEAT INDUSTRY, COLLEGE OF AGRICULTURE, EDINBURGH.

SOME time ago a party of English agricultural writers, of which I had the pleasure of being a member, were invited by His Excellency Mr. Ignatius Daranyi, Minister of Agriculture in Hungary, to visit that country and see its developments, so that they could report through their journals to the English people in how far Hungary had adopted modern ideas in connection with agriculture.

The party arrived at Budapest on September 14, and left there on September 27, and during the interval they had the opportunity

of seeing the greater part of Hungary. This was no light undertaking, as the Kingdom of Hungary covers an area of some 125,430 square miles, or just 4,000 square miles larger than that of the United Kingdom. With a strong desire, however, to show the visitors everything possible within such a limited period, the arrangements had been made so that scarcely an hour was lost, and there was something fresh to see all the time.

The journey through Hungary began really at Budapest, in examining some of the notable institutions of that great modern city and extended through Lake Bálaton, where the fishery of that great inland sea was duly examined, as well as the beautiful vineyards which surround its shores. On September 17, the party journeyed to Kcmárom, where they had an opportunity of seeing a large farmers' school, and also a farm conducted by the Minister of Agriculture and which is known as Dunaörs, and where in the unavoidable absence of His Excellency, the party were sumptuously entertained by his brother. From Dunaörs they went on to Kisbér, where the greatest hospitality was also extended to everyone.

Kisbér is one of a number of State stud farms conducted by the Hungarian Government, and where horses are bred for home requirements and also for export. The various farms are Kisbér, Bbolna, Mezöhégyes, Forgáras, and Palánka. These farms contribute amongst them to a really gigantic horse-breeding industry, which is one of the greatest resources of agriculture in the country, and which may be judged from the fact that horses to the value of £1,166,000 sterling, or thereby, are exported every year.

The cattle of the country present quite different types from those in Western Europe, and the long-horned Hungarian breed is of quite peculiar interest. These cattle are, for the most part, used for draught oxen, as it is quite an unusual thing to use horses for draught purposes. Of late years there has been an attempt made to foster the breed of heavy horses for work on the farms, but very little impression has been made upon the numbers of cattle used for work. The cattle in the country are divided up into the native Hungarian and imported breeds, and the latter consist of Simmenthaler, Pinzgauer, and Algauer breeds, all of Swiss origin, and they are principally to be found in the elevated and mountainous districts; whereas the white Hungarian cattle are generally found in the Great Hungarian Plain. Hungarian cattle form 22 per cent. of the total numbers in the country, and the others mentioned amount to 78 per cent.

The object in view in cultivating the Swiss breeds is, of course, the production of milk and butter. Unfortunately, however, the production of butter has been sadly neglected in Hungary, and the business is only now being formed into a definite industry by itself. It is quite possible that in a few years time Hungary may become, as it is entitled to, a very large export butter area.

The Great Hungarian Plain, which is right in the centre of the country and occupies one-third of its total area, is one continuously level surface, and is devoted to various systems of agriculture, but the fact that long droughts are common has an extremely deterring effect upon agricultural progress. On the hills all round about the plain, and which form a kind of fringe on the frontier of the country,

GENERAL ABATTOIR, BUDA-PEST. MAIN ENTRANCE.

Buda-Pest possesses one of the most modern abattoirs in Europe for the handling of cattle and sheep, and the architecture is not the least remarkable feature of the building.

wine growing is conducted to an enormous extent. So much so indeed, that it forms the staple industry of the mountainous districts.

Of crops, the principal is that of wheat, which forms 30·61 per cent. of the total agricultural yield. Next to that is maize, which forms 21·57 per cent., and next again is that of oats, forming 9·00 per cent. Agricultural products such as barley, potatoes, tobacco, and other crops are not cultivated to any great extent.

The number of swine in the country is returned at about 5,000,000 and these, for the most part, consist of the Mangalicza breed, which is only one step removed from the wild boar. The Mangalicza pig is a coarse, long-haired, ungainly looking animal, and contains about 5 in. of fat along the back, so that for ordinary purposes to which pigs are put, namely, for bacon curing, this breed is of very little use. It appears, however, that the fat is largely used to replace butter in Hungary and, in consequence, the perpetuation of this race of swine continues. A year or two ago the Department of Agriculture introduced some 1,200 pigs from England into the country, and these were mostly of the Yorkshire breed. These English pigs have been distributed in various parts of the country, and the results are visible in some districts already. It is hoped that this is only a beginning of an alteration in the breed of pigs, which will ultimately result in their character being entirely changed, and should this be accomplished, there is very little doubt but that Hungary will become a bacon-curing country, as it seems specially adapted to the growing of pigs.

The capital of Hungary is Budapest, and naturally one would expect to find there the most up-to-date markets and abattoirs, and it may be said at once that in these matters Hungary is second to no other country. It is also rich in many institutions which are identified with animal husbandry, the care of live stock, and the production and handling of animals designed for food.

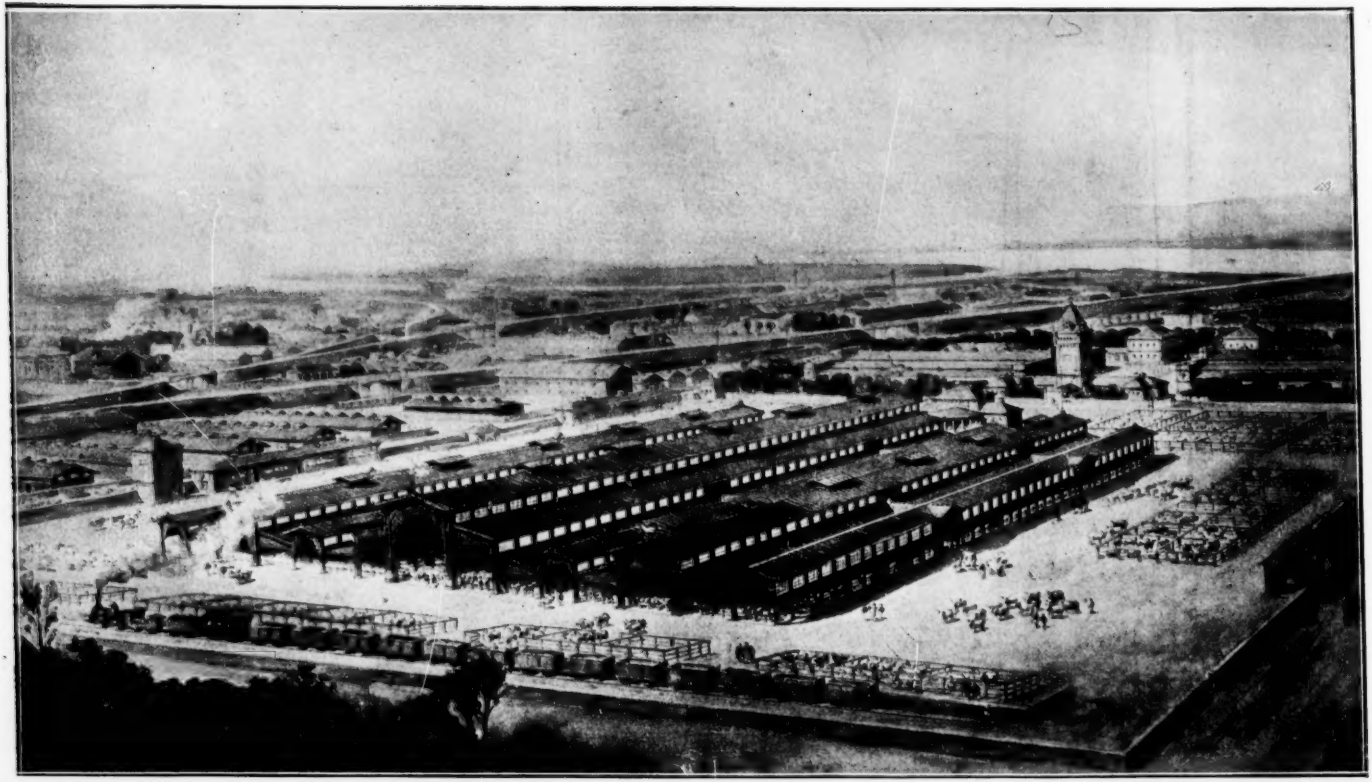
The principal institution of that kind is the Veterinary College (École Supérieure Vétérinaire Royale Hongroise de Budapest), which is one of the best of its kind in Europe. It was founded in 1782, and it was then decreed that such a college should be established as an adjunct of the Faculty of Medicine of Budapest. Since then it has gone on increasing in size and facilities for instruction until at the present day it exists as a complete university, with laboratories and museums devoted to ecch subject necessary to the veterinary degree. The *personnel* of the College consists of some thirty professors and assistants, and they are ably presided over by Dr. Hutyra, who is rector. The leading professors are: Chemistry, Dr. Leon Lieferman; Anatomy, Dr. Adalbert de Nadasky; Zoology, Chas. Monostori; Pathology, Dr. Etienne de Ratz; Physiology, Dr. François Tougl; Bacteriology, Dr. Hugo Preisz; Pharmacy, Dr. Kossa; and Surgery, Dr. Adalbert Ilõsz. Many of these gentlemen are known far beyond the College, and the writings and investigations of the Rector, Dr. Hutyra, in the domain of tuberculosis particularly, are familiar to those who have followed tbe literature of this subject.

The veterinary profession is closely identified with the meat industry in Hungary, as a rigid system of inspection of animals intended for food, both alive and dead, takes place throughout the whole country, and this inspection is invariably carried out by veterinary officers.

The markets and abattoirs of Budapest are modern institutions, and they are designed on quite modern lines. In the markets it is noticeable that the cuts of meat are entirely different from any obtained in Western Europe. It is also noticeable that quantities of pork are on sale which is not Hungarian at all, but which, we find, comes on a long journey from Servia. It is rather remarkable that this pork arrives in first-class condition, and this is due to the fact that it is conveyed in railway waggons fitted as refrigerator cars. The meat itself registers 42° F. and, of course, at that temperature, would keep for a much longer period than seven days. The average price of the whole carcase of a pig, weighing net 180 lb., is 5d. per lb., so that it cannot be looked upon as being very cheap. Beef and veal are sold at about the same prices as are realized in Smithfield Market.

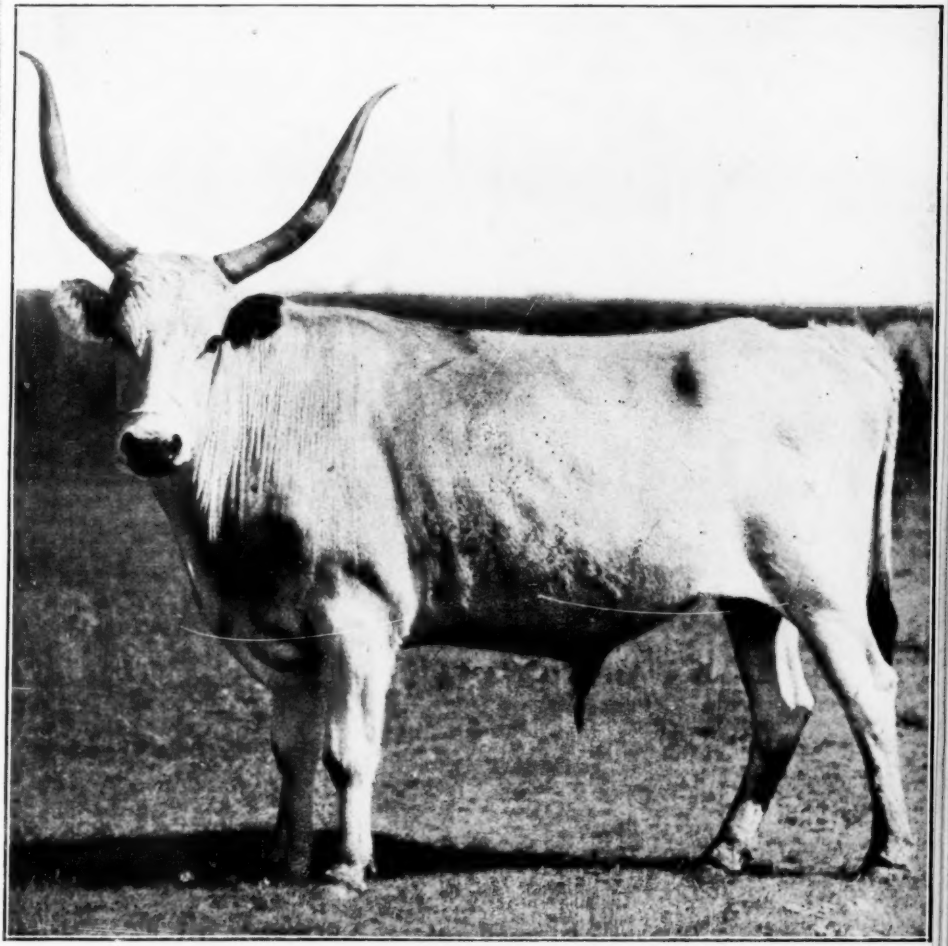
One of the places of interest visited by the party in Budapest was the abattoirs. These are located just outside the city and are three in number, consisting of the pig abattoir, the horse abattoir, and the cattle and small animals abattoir, and, along with the cattle markets are all enclosed in an area of 50,000 acres set aside for the purpose. In the pig abattoir the number of animals to be handled per day seems to average about 1,000, and all those that were passed for slaughter on the occasion of our visit belonged to the Mangalicza breed. As they are brought into the abattoir yards they are stamped with a number which not only shows on the hair, but is also punctured on to the skin by the number being formed of a number of needle points. These points are, along with the surrounding stamp, pressed upon a pad containing violet marking ink and the impression is made on each animal as it passes—the number used being that of the owner. By this means he can trace his pigs right through the abattoir, as the impression on the skin remains.

All the pigs were very heavy, and the average weight would be 20 stone, or about 280 lb. dead weight. The slaughtering is not quite so humanely carried out as one would wish, the animals not being stunned, as is now common in most up-to-date abattoirs, nor are they hoisted up to a track bar to be bled. In so far as the furnishing of the abattoir is concerned, the methods of handling the pigs are pretty much in conformity with our own ideas; the cooling and handling being similar to what we are used to. The cutting up, however, was totally different, and this was due partly to the large blocks of fat which were cut off from each carcase, and which were handled in large pieces. It appears that great numbers of these pieces are salted, there being quite a demand for salted fat. The curing of the meat takes place in the abattoir, and the wet process is the one carried out, but as curing is entirely a primitive matter in Hungary, it would not compare with the methods of nations which have specialized this department of agriculture. It is noticeable that the number of condemned carcases amounted only to 1½ per cent. of the whole, and these were paid for out of a common insurance fund, to which every slaughterer of pigs contributes 10d. a pig. The handling of the residues is conducted by a Society composed of the pork purveyors of Budapest, and they charge for every pig that is slaughtered the sum of 1s. 8d., and retain the offals entirely. At the end of the financial year the profits derived from the offals are divided *pro rata*, and as a consequence the business is conducted in



BUDA-PEST GENERAL ABATTOIRS. PERSPECTIVE VIEW.

The Buda-Pest cattle and sheep abattoirs are surrounded by cattle markets, so that the animals can be conveniently inspected when alive as well as in the carcase. There are two other large abattoirs in the city ; one is used for pigs alone and the other for horses.



HUNGARIAN OX.

The most remarkable feature of the agriculture of Hungary is the Hungarian ox, which is used on the Great Hungarian Plain as a draught animal, and may be seen in the fields in teams of two, four, and six. The Hungarian ox has huge horns, and stands much higher than British cattle. After being used on the farm, the oxen are slaughtered for beef.

a very satisfactory way to all concerned. It is a system of co-operation which is well worth imitating.

In the horse abattoir some 5,000 horses are handled every year, but these are not specially bred for the purpose of food. The horses are those which have to be destroyed for some fault, and the flesh is sold to poorer people in various forms.

The cattle abattoir is a combination of the booth system and the large hall, so that each slaughterer may have a room for himself if he prefers it, and cares to pay for it. The handling of the carcases, however, is practically the same as in other countries, with this exception, that the animals are not stunned, and this particular feature of the business did not commend itself to any of the visitors. The same system of insurance pertains in all the abattoirs, and for each animal the butcher has to contribute to the common fund.

The cattle mostly seen in the abattoirs were those of the Hungarian breed, and it appeared that they were drawn from the plains after having been draught oxen for some years—there was no rule as to age. They were tall and coarse-looking animals, and range from 16 to 17 hands high at the shoulder. The live weight of many is about 28 to 30 cwt.! It will therefore be seen that the proportions of weight and size are far beyond anything we are familiar with.

The system of meat inspection is very complete, there being veterinary officers at the abattoirs who not only inspect the animals alive, but pass the carcases after they are slaughtered. The same system obtains throughout the whole of Hungary as in Budapest. It appears that every community which has a demand for a large quantity of meat is compelled to erect a slaughterhouse in conformity with certain sanitary and veterinary requirements. As a consequence, up-to-date abattoirs exist throughout the whole country, and these are under the inspection of qualified veterinary officers. Lately there has been a movement to carry the business of abattoir reform a step further, and in some places an apparatus has been erected for the utilization of the condemned carcases, so that what is absolutely offensive may be reduced to an innocuous powder within the abattoir gates, and what may be sold freely in the cooked condition is also placed at the disposal of the poorer portion of the public.

On the whole, the visitors were highly impressed with the manner in which the meat trade is conducted in Hungary, and they were gratified to see that in this direction, as in many others, the Hungarian people were well abreast of modern progress.

I am indebted to Professor A. J. Krolopp, of the Department of Agriculture, Budapest, for procuring for me the photographs from which the illustrations in this article are reproduced.

In so far as the comforts of the journey were concerned, words altogether fail in conveying an idea of the unbounded hospitality which the visitors met with everywhere. The journey was organized by Mr. Németh, of the Department of Agriculture, in conjunction with Mr. Rakösi, of the Otthon Club, and these gentlemen were ably assisted by Mr. Pál Bákonyi, who accompanied the party throughout. Many others assisted and contributed in every possible way to the comfort and pleasure of the visitors, who will long retain grateful recollections of the many kindnesses offered to them in Hungary.

(Plates for this article kindly lent by the proprietors of the "Meat Trades' Journal.)

THE INOCULATION OF SHEEP AGAINST BLUE-TONGUE AND THE RESULTS IN PRACTICE.

BY DR. ARNOLD THEILER, C.M.G., GOVERNMENT VETERINARY BACTERIOLOGIST.

SOME few years ago Mr. Spreull, M.R.C.V.S., of Cape Colony, introduced a method of immunizing sheep against blue-tongue by means of a serum and virus inoculation, and I conducted some experiments at this laboratory on the lines he indicated. Whilst passing the virus through numbers of sheep I noticed that after the tenth generation the mortality from the inoculation completely ceased, as shown in the following table:—

Generation of virus	Number of sheep injected	Number of deaths during injection	Remarks
1	11	1	
2	7	2	
3	4	1	
4	3	1	
5	3	1	
6	3	0	
7	12	0	
8	11	1	
9	13	2	
10	32	1	
	99	10	
11	49	0	
12	19	0	
13	41	0	
14	23	0	
15	39	0	
16	99	0	
17	202	0	One sheep died forty-two days after inoculation.
18	138	0	
19	72	0	
20	64	0	
21	58	0	
22	32	0	
23	25	0	
24	2	0	
25	4	0	
26	4	0	
27	12	0	
28	2	0	
29	2	0	
30	4	0	
31	2	0	
32	2	0	
33	2	0	
	897	0	

These results induced me to abandon the simultaneous serum and virus injection, and I introduced the vaccination method. The vaccine was obtained from the eleventh generation upwards, and of the 897 sheep injected none died during the treatment, and the temperature charts showed that all animals passed through a typical blue-tongue reaction. That is to say, the temperature would, on an average, rise from the fifth day, reaching the maximum of 105° F. to 106° F.

on the ninth day, then falling daily, reaching a normal record on the fourteenth day.

Amongst these 897 sheep vaccinated at the station, clinical symptoms were rarely noticed, although occasionally a slightly abnormal discharge from the nose was present, and, perhaps, a slight swelling of the lips, but in no cases were lesions noted in the mouth, or redness of the lips, or excoriations of the mucous membranes or tongue, or in the feet (lameness, for instance). Of course these vaccinated sheep were stabled under the best conditions. In practice, however, where the sheep are not stabled at all, or only kraaled, and where they are exposed to the weather, some severe reactions must be expected. In such cases the general opinion amongst farmers is that from the tenth to thirteenth days after vaccination sheep show distinct symptoms of illness, lie down, appear to be lame, and when they finally rise show stiffness; in addition to this, catarrhal symptoms in the nose and swellings of the lips are noticed, but only in exceptional cases are sore lips and sore gums noted. The illness passes over within two or three days, and the animals seem to recover from the effects of the reaction very quickly.

SEASON 1906-7.

In February, 1907, this vaccine was introduced into practice, and, although it had been thoroughly tested on the station, I wished to compare the results in practice, and considered this first introduction in the light of an experiment. Accordingly the vaccine was issued free of charge to all applicants, and, as far as possible, syringes were lent for the operation.

We received a slight set-back at the commencement, as in one case in the Waterberg District a heavy mortality occurred amongst the vaccinated sheep. On investigation it was found that at the time of vaccination heavy rains were experienced, and the vaccinated sheep lying in the kraals contracted blood-poisoning owing to the mud, &c., entering under the skin through the puncture caused by the vaccination. It must be explained here that blood poisoning is seldom caused if dirt enters an open wound to which air has free access; it is only when this dirt or mud gets under the skin, where it sets up a swelling, that blood poisoning follows. Our directions for use were accordingly amended, and all applicants were instructed not to vaccinate during or immediately after heavy rains.

At the end of the season statistics were asked for as to the results obtained, but unfortunately only a small percentage came to hand, which are given hereunder. The deaths following vaccination have been divided into those occurring (1) within nine days from inoculation, (2) from the tenth to fourteenth days, and (3) after fourteen days from inoculation, the reason for this being that the whole course of blue-tongue averages fourteen days, and this period must, therefore, be allowed for the reaction consequent on the vaccine before immunity is finally established. An animal already suffering from the disease at the date of vaccination would probably die within nine days. Deaths occurring between the tenth and fourteenth days are considered as a result of vaccination, and the vaccine is probably responsible. Mortality after the reaction has finished, that is to say, from the fourteenth day onwards, has been considered as a sequel of the disease.

As in many instances farmers did not inoculate their whole flock, statistics were also collected as to the mortality amongst the non-vaccinated animals, and, for the purposes of comparison, have been embodied in the following return :—

RETURNS OF MORTALITY AMONGST VACCINATED SHEEP AS COMPARED WITH MORTALITY OF NON-VACCINATED SHEEP RUNNING ON THE SAME FARM.

District.	Vaccinated Sheep.				Non-Vaccinated Sheep.		Percentage of Deaths amongst	
	Number Vaccinated.	Number which died within		Number which died after 14 days.	Number.	Number which died.	Vaccinated Animals.	Non-Vaccinated Animals.
		1—9 days.	10—14 days.					
							per cent.	per cent.
Ermelo ...	1,906	12	17	2	3,228	336	0·9	10·0
Heidelburg ...	423	1	0	2	3,542	283	0·0	8·0
Middelburg ...	142	39	6	0	2,204	599	3·0	27·0
Lydenburg ...	966	0	1	3	2,289	200	0·1	9·0
Marico ...	36	1	0	0	400	16	0·0	4·0
Waterberg ...	1,200	0	0	0	Not stated		0·0	—
Rustenburg ...	11	0	0	0	Not stated		0·0	—
Pretoria ...	1,065	19	1	0	Not stated		0·1	—
Barberton ...	10	0	0	0	130	Nil	0·0	0
Standerton ...	106	2	1	0	4,425	383	0·9	0
Volksrust ...	10	0	0	0	—	—	0·0	—
Total ...	5,875	74	26	7	16,218	1,817	0·4	11·0

Naturally these figures only represent a small minority of the sheep in the Transvaal and the number vaccinated during the season, but the return is accurate as regards the statistics at my disposal, and the results may safely be considered as typical for the Colony. The percentage of deaths amongst vaccinated sheep amounted to 0·4 per cent., and amongst non-vaccinated animals to 11 per cent. That is to say, for every sheep which died during inoculation, about twenty-seven non-vaccinated sheep succumbed to natural infection.

SEASON 1907-8.

I considered these results very encouraging, and accordingly made arrangements to meet all requirements for the 1907-8 season. The following instructions for use were distributed to applicants, together with a memorandum giving the names of firms willing to supply syringes, and the prices charged :—

"DIRECTIONS FOR THE USE OF BLUE-TONGUE VACCINE FOR THE SEASON 1907-8.

"This vaccine may be obtained on application to any Government Veterinary Surgeon, or to the Government Veterinary Bacteriologist, P.O. Box 593, Pretoria, at a charge of 1d. per dose, ten extra doses being added gratis to every hundred doses ordered.

"The utmost care is exercised in its preparation, but no guarantee is given, nor will compensation be paid for any deaths or accidents which may follow its use.

"Hypodermic syringes for carrying out the inoculations may be obtained from the firms whose names are given on the attached list. Syringes which are provided with a graduating wheel on the plunger bar are recommended as being most convenient for use. With care such syringes will last for several years.

"The greatest care must be taken to prevent the contamination of the vaccine or the syringe by dust or other foreign matter.

"Vaccine should *be* unpacked, *kept in a cool place till required for use*, and should be used within fifteen days from date of arrival.

"When the vaccine is unpacked, examine it, and if any bottles show leakages or have broken corks they should be returned to the Government Veterinary Surgeon or the Government Veterinary Bacteriologist.

"Do not inoculate the whole flock immediately the vaccine arrives, but first of all inoculate about twenty of the flock with the smallest bottle of vaccine as soon as possible after the vaccine is received.

"The operation of vaccinating is very simple, but should be carried out carefully according to the manner laid down herein.

"First the syringe should be disinfected: to do this place some cotton wool or cloth in the bottom of a clean tin, basin, or pan, and fill this with water; take the syringe to pieces, unscrewing the metal cap at the top of the glass barrel; place on top of the cotton wool in the pan, together with the needle, and place the pan on the fire. After the water has boiled for about ten minutes, take the syringe out and screw it up, and fit the needle to it.

"Next obtain a clean glass tumbler or cup, and wash with boiled water; then uncork the bottle of vaccine in some place where dust is not likely to enter it, and pour some into a cup, placing a clean piece of paper over the glass so that it extends about half-way down, and forms a cap. After pouring out the vaccine recork the bottle immediately, and do not return to it any vaccine which has been poured into the cup, and which may be left over after inoculation.

"Once a bottle has been opened, all the vaccine should be used the same day.

"The sheep which are to be inoculated should be prepared for the operation by washing the inside surface of the thigh, where the vaccine is to be injected, with an antiseptic solution made by adding 1½ tablespoonfuls of Jeyes' fluid, or Little's dip, or carbolic acid to one whisky bottle full of water. The operator's hands should be washed in the same solution, and a small quantity should also be kept in another vessel, with which the syringe and needles should be washed from time to time.

"The syringe should then be filled with vaccine, the animal to be inoculated should be taken out of the kraal, the needle should be inserted under the skin inside the thigh—after the skin has been washed in the manner prescribed—and 1 c.cm. of the vaccine should be injected. Turn the animal loose after the operation, but keep it separate from those which have not been vaccinated. A little uneasiness will be shown by the animal after the vaccine is introduced under the skin, but this soon passes off. For the first few days after injection the sheep should be kept on dry ground, and not allowed to lie in dusty or muddy kraals.

"Never vaccinate sheep in kraals, or during rain, or immediately after a heavy rain, and if the day is windy inoculate the animals at the windward side of the kraal in which the non-vaccinated animals have been placed.

"Neglect of these precautions may lead to contamination of the vaccine or of the wound, and may set up blood poisoning. After inoculating, the syringe should be carefully washed in the antiseptic solution, and should be wiped dry before being put away. Ten days after the first twenty sheep have been injected, if there is no sign of swelling at the seat of the inoculation, the remainder of the flock may be inoculated. The sickness set up by the inoculation begins about nine days after, and lasts a few days. Immunity against natural attacks of blue-tongue is not established for fifteen days after inoculation.

"N.B.—Ewes heavy in lamb should not be inoculated. Lambs over 6 weeks old should not receive more than half the dose for ordinary sheep. Lambs under 6 weeks old should not be inoculated. Rams should not be castrated while undergoing reaction, nor should castrated animals be inoculated before the wounds caused by castration have completely healed."

* * * * *

The total number of doses issued in the Transvaal between September, 1907, and February, 1908, amounted to over 90,000, whilst over 100,000 doses were distributed amongst the other South African Colonies. Considering the number of sheep in the Transvaal, the issue of 90,000 doses does not seem very high, but it must be remembered that last season was not a severe one for blue-tongue, and many farmers refrained from vaccinating on this account. It is a peculiar fact that the majority of farmers waited for the disease to break out before vaccinating their flock, notwithstanding our repeated directions to the effect that the vaccine has no curative value on animals suffering from blue-tongue. The absence of heavy rains last season appears to corroborate our theory that the carrier of the blue-tougue micro-organism is a biting insect which requires water for its development.

It has been impossible to collect statistics with regard to 1907-8, although with but few exceptions, which are detailed later, no untoward reports have been received, and the results of the vaccine have proved eminently successful.

Loss of Condition.—This would appear to be the only complaint that can be brought against the vaccine, and even then one that can be easily prevented. The vaccine was introduced into practice for the first time in February, 1907, and discontinued in April. It was reintroduced in October, 1907, although the bulk of the vaccine was applied for in November, December, January, and February. The vaccination undoubtedly pulls sheep down in condition slightly, in the same way as a natural attack, and those vaccinated after December would have to recover from the reaction under adverse climatical and grazing conditions. It is, therefore, advisable for sheep to be vaccinated early in the spring, so that they would be able to thoroughly recover during the summer months, and be in good condition to withstand the winter.

Abortion.—Some cases of abortion which occurred amongst

vaccinated ewes were reported from Cape Colony, Heidelburg, and Volksrust districts. Although the mortality in these cases was below 15 per cent., the matter was of great importance, and a full investigation was made. The reports to hand showed that the rams were put to the ewes about a month before the latter were vaccinated. Cases of abortion commenced within a month from the date of vaccination, and some dead lambs were thrown at the usual lambing time. With regard to these dead lambs, in all cases they were not full grown.

On first sight it would appear that the vaccine exclusively was responsible; but it must be borne in mind that these are only a few cases out of some 220,000 sheep that have been vaccinated, and even admitting that the vaccine was incriminated in some way or other, I am of opinion that another agency must have been acting at the same time.

Numerous other farmers vaccinated their sheep after they were put to the ram, without any mishaps, and in the Heidelberg district a farmer reported that the ewes commenced lambing directly after vaccination, and continued right through without any untoward results. (Another farmer insisted that the vaccine had caused the majority of his ewes to give birth to twins!)

For the future, however, it would be advisable to avoid running any possible risks, and all ewes should be allowed to recover from the effects of the vaccine before tupping. That is to say, vaccinate the flock at least a fortnight before turning the rams amongst the ewes.

Diarrhœa.—In the Orange River Colony a case was reported where, amongst a flock of vaccinated sheep, a few died showing all the lesions of blue-tongue, and. in addition, those of diarrhœa. In this instance it is difficult to say whether diarrhœa was only a symptom of blue-tongue as in very severe cases of this disease such may sometimes be the case. It is, however, more likely that at the time of the blue-tongue reaction the sheep were suffering from some intestinal complaint, which, together with the reaction, caused the deaths. It must be expected that when a large number of sheep are inoculated, all kinds of coincidences may occur, and it is sometimes difficult to say whether deaths in such cases are due to the coincidental complaint alone, or to the concurrent blue-tongue reaction.

Loss of Wool.—The question has been raised whether the vaccine causes sheep to lose their wool, and, if so, the argument naturally follows that it is better to lose sheep from blue-tongue than to vaccinate and suffer heavy losses owing to the quality and low price obtained by the sale of the wool. I have not received any reports to this effect, and I do not consider that any apprehensions need be felt on this point, if my recommendations are carried out, as no such case occurred here on the station amongst our vaccinated sheep; but, at the same time, it stands to reason that as the vaccinated sheep pass through an attack of blue-tongue and show signs of illness, even though slight, the growth of the wool may be retarded, and this would naturally be more pronounced the later the sheep were inoculated.

Dipping.—A few losses have been observed in cases where sheep have been dipped for scab whilst undergoing, or shortly after, the blue-tongue reaction. It has to be expected that under these conditions

one or the other animal will develop more severe reactions, and the effects of this, in conjunction with the dipping, may be responsible for deaths.

SEASON 1908-9.

For the ensuing season vaccine will be ready for issue about the middle of September, and all farmers who wish to vaccinate their flocks should make early application through the Government Veterinary Surgeon of their district. A copy of the following instructions will be supplied to all applicants:—

"DIRECTIONS FOR THE USE OF BLUE-TONGUE VACCINE FOR THE SEASON 1908-9.[1]

"*Read this Carefully.*

"This vaccine may be obtained on application to any Government Veterinary Surgeon at a charge of 1d. per dose. . . . .

* * * * * *

"With a view to avoiding all risks, and in order to become acquainted with the method of vaccination, it is recommended that about ten to twenty sheep should be vaccinated in the first instance, and if there is no sign of swelling at the seat of inoculation within fifteen days, the remainder of the flock can be inoculated. This procedure is not absolutely necessary, but is advisable for the mentioned reasons, and the results will serve as an indication of the symptoms to be expected when the remainder of the flock is done.

"N.B.—Ewes in lamb must not be inoculated. Lambs over six weeks old should not receive more than half the dose for ordinary sheep. Lambs under six weeks old should not be inoculated. Rams should not be castrated while undergoing reaction, nor should castrated animals be inoculated before the wounds caused by castration have completely healed. Sheep introduced from other parts of the country should not be inoculated until fourteen days after arrival."

* * * * * *

In conclusion, I wish to emphasize one or two points upon which some farmers appear to labour under a misapprehension. All the vaccine is of one quality; that is to say, the material in one bottle does not pass sheep through a more severe reaction than that in another bottle. If on vaccinating the first twenty sheep only slight reactions are noted, and yet when the whole flock is done about ten days later severe reaction, and, perhaps deaths occur, some other agency must be at work. It may be that between the two vaccinations blue-tongue has broken out, and in such cases the vaccine will not have any curative effect on sheep already suffering from the disease. This contingency can be avoided by carrying out my recommendations to vaccinate early.

Other cases occurred last season where the flock were affected with worms, and which, in conjunction with the vaccination, caused severe reactions and deaths. Again, sheep freshly introduced from other Colonies should not be vaccinated immediately after arrival, but, first of all, should be allowed to acclimatize.

[1] For the most part these instructions are the same as those issued for the season 1907-8. The first and last paragraphs are altered and an additional one inserted.

As already pointed out, coincidences are possible, and must be expected, and the greater the number of sheep vaccinated, the more coincidences will naturally follow. If at the time of vaccination sheep are suffering from some invisible ailment, it will be brought out by the reaction, and the reaction may develop into very severe symptoms of blue-tongue, so that apparently an animal dies as a result of the vaccination. This can only be explained by accepting that the concurrent ailment is responsible for the development of the severe reaction. We base this opinion (1) on the observation that amongst the 897 sheep vaccinated at this laboratory, and of which very careful records were kept, no deaths occurred from the inoculation, the animals having been carefully selected, and were all in first-class condition when vaccinated; and (2) farmers state that, as a rule, the reaction from blue-tongue vaccine is not a severe one, and, in most cases, passes unnoticed.

It is our experience that where deaths occur amongst sheep shortly after, or even several months after, vaccination, farmers are inclined to attribute this mortality to the inoculation in some way or other. It is difficult to state in every particular instance whether any connection is possible between the two, but in the great majority of cases we can safely reply in the negative.

(*Transvaal Agricultural Journal.*)

Clinical Articles.

AMPUTATION OF THE UTERUS IN A COW.

BY SAMPSON BENNETT, M.R.C.V.S., CAMBRIDGE.

THE patient was a Shorthorn cow, at the third time of parturition, and had a very easy time on each occasion. On the third occasion she calved during the night, the calf being passed without assistance, and in the morning it was found that the uterus was everted and very much soiled. The animal did not show any constitutional disturbance, and the calf was sucking her in a natural manner. After examination I thoroughly cleansed the part with carbolic solution, and with the aid of a clean sheet and two assistants I managed to return the uterus without much difficulty. The lips of the vulva were stitched across with a thick twisted cord, but some three hours later she strained violently, burst the stitches, and everted the whole organ again. I returned it a second time, and applied a West's clamp together with a truss, but in about an hour she had forced the wound out again. After returning it the third time I made her stand with her head fairly elevated to about 45°. She quickly burst all this away, and I then decided to amputate. This I did by means of the écraseur, having previously put on a thick twisted cord ligature about 2 in. above where it was cut off. There was no hæmorrhage at all. I returned the stump into the vagina, after cleansing the part thoroughly, and the cow required no further treatment, making an excellent recovery. This was nine months ago. And at the present time she is giving about 4 gallons of milk a day, and is putting on condition very perceptibly.

OVARIOTOMY OF A VICIOUS MARE.

BY GUY SUTTON, M.R.C.V.S., OXFORD STREET, W.

On October 12 I removed the ovaries from a light van mare, aged 16. For the last nine months she has been most dangerous, has smashed up three carts, was constantly in œstrum and very indecent. The right ovary was much distended when *in situ*, but readily ruptured when compressed with the hand to facilitate the passage of the écraseur chain. When fresh, minus the cystic contents, they were of equal weight, viz., 4 oz.

Four hours after operation the mare would kick viciously when approached in her box. On the third day she was much quieter, and allowed her tail bandage to be removed. Perhaps this was to some extent due to shock, but her appetite, pulse, and temperature did not indicate much disturbance, and up till now her recovery has been uneventful.

AN INTERESTING RADIOGRAPH.

BY GUY SUTTON, M.R.C.V.S., OXFORD STREET, LONDON, W.

The enclosed radiograph shows the left fore limb of a Pekinese dog, aged 2. On September 20 he came to me with the history of occasionally screaming when picked up. I spent some few minutes examining him, and noticed a rod-like body embedded in the substance

of the triceps muscle, its long axis running at right angles to the shaft of the humerus. He allowed this region to be freely pinched and handled without showing discomfort. The owner readily consented to a radiograph being taken, but as she had to leave town for a week it was postponed until her return. On September 28 I again saw him. The scapulo-humeral region was now slightly swollen, and gave, on pressure, a crepitating sensation to the finger suggestive of emphysema.

The radiograph was taken by Dr. Ironside Bruce, and shows a small darning needle lying in the triceps muscle, the point being slightly under the humeral shaft, and the eye some ½ in. from the posterior margin of the muscle. It was decided to operate, and a guarded prognosis as to the size of the wound was given in view of the fact that foreign bodies evident by radiograph are sometimes not readily exposed on section. Luckily, on manipulation whilst the muscles were relaxed under chloroform, the point of the needle was felt to impinge upon the humeral shaft, and by continuing digital pressure upon the posterior margin of the muscle the obtuse end of the needle was made to travel towards a small incision which had been made in the skin, and extracted by the aid of forceps. All swelling had subsided by the forty-eighth hour, and the patient made an excellent recovery.

JAUNDICE FOLLOWING GASTRO-ENTERITIS.—DEATH.

BY EDGAR BELCHER, M.R.C.V.S., KENSINGTON, W.

THE subject of this condition was a bulldog, aged 2, who was suspected by the owner to have been poisoned, and the probability is that this surmise was correct. The first departure from health was sudden, frequently occurring attacks of vomiting, and this is what led to the suspicion of poisoning. The owner gave a dose of castor oil and syrup of buckthorn, which opened the bowels; but the dog could not be persuaded to eat anything for a week, except occasionally a little raw meat. During the whole of this time his bowels never moved, and he very rapidly lost flesh.

It was at this stage when he was brought under our notice, and his symptoms were as follows: His skin, mucous membranes, and eyes were deeply bile-stained, in fact, were quite yellow. The skin was harsh and tight, so much so that it was impossible to pinch up a fold over the ribs, and this was so noticeable because the bulldog's skin normally is so loose everywhere. The temperature was 100° F., breathing normal. He looked as if he were only "skin and bone," and instead of his usual happy disposition, was snappy and bad-tempered. He was listless, and did not like to be touched or to move.

Treatment.—Owing to his weak condition, it was not advisable to administer a strong purgative, so his bowels were relieved by means of a glycerine enema, and he was given 20 grains of magnes. sulphate and 10 grains of magnes. carbonate every four hours until his bowels were rather relaxed, when half the above doses was continued. A hot-water bath was also ordered him, and there was slight improvement in his condition the next day; he was livelier, and took a little food; the temperature was normal, and there was no return of the vomiting. However, two days later, after getting gradually weaker, he died, and the autopsy revealed that the stomach, especially in the neighbourhood of the pylorus, and the first 6 in. of the intestine, were intensely inflamed, the mucous membrane being very much thickened. There was no enteritis in any other part of the bowel. The liver was apparently normal in consistence, but was rather enlarged, and was infiltrated deeply with the biliary pigment. The kidneys, lungs, heart,

and other organs presented no other abnormality except the biliary pigmentation. The gall-bladder itself was distended with bile.

This appears to be a clear case of jaundice caused by the blocking of the bile duct through the swelling of the inflamed bowel wall; and it is apparently equally clear that the primary cause was poison of some sort which had brought on the violent vomiting which occurred on the first day of the illness.

It is interesting to note that not a single worm of any kind was to be found in the bowel, and it is a noticeable fact that when enteritis comes on, the worms invariably disappear mysteriously from their normal habitat, and yet they are never in such cases to be seen in the fæces if any be passed. Are the worms killed by the toxic products of the enteritis and digested entirely? This seems to be the only solution of their disappearance.

SOME CLINICAL NOTES ON CATTLE DISEASES.

BY J. F. HEALY, M.R.C.V.S., MIDLETON, CO. CORK.

Necrosis of the Tongue in Young Calves.

This disease is found in calves between the ages of 3 weeks to 3 or 4 months.

Symptoms.—Slight salivation, followed by champing of the jaws and grinding of the teeth. On examination of the tongue areas of necrosis are found varying in size from $\frac{1}{8}$ to $\frac{1}{2}$ in., sometimes larger. It is, in my opinion, due to umbilical invasion, and I never found it in any herd where proper sanitation is carried out, but always exists in badly-drained and badly-ventilated premises.

Treatment.—I curette with an ordinary Volkmann's spoon the affected area, and paint over with a solution of glycerine, carbolic acid, boric acid and tincture of iodine. I also give laxative medicine. I have lately read papers which state that this disease is of an actinomy colic origin, but I do not agree with this theory, as actinomycocis is rarely found in calves of that age.

A Form of Bovine Lymphangitis.

This disease is found in 2 or 3-year-old bullocks which have been kept in a straw yard during the winter months, and let out on grass during the following spring. It generally manifests itself in the months of June or July, and is found to affect the hind more often than the forelegs.

Symptoms.—A corded condition of the lymphatics is found from about 3 in. above the hoof to 5 or 6 in. above the point of the hock. On palpation the small enlargements along their course feel like small "kernels" buried in the skin. As a rule, three or four near the hoof suppurate, and then the others disappear altogether. Some authorities say this is a tubercular disease, but I have made *post mortem* on several cases, and found no trace of tuberculosis elsewhere. It is, in my opinion, due to clay baccili which cattle pick up in their feet when standing in passage-ways and at gates, probably when waiting to be fed. They are generally amenable to treatment, which

consists of poulticing and painting the affected parts with Archangel tar 6 parts, iodine 2 parts, carbolic acid 1 part.

Occlusion of the Preputial Orifice.

This occurs occasionally in large herds of grazing store cattle.

Symptoms.—Animal leaves his companions and "mopes" by himself, and distension of the abdominal wall is seen, resembling ascites, which on examination is found hard and rigid. The preputial orifice is found occluded. It may be due to animals jumping on one another, or by getting caught on fences when straying. The urine permeates all the tissues, and is sometimes seen oozing near the scrotal sac.

Treatment.—Urethrotomy a little below the ischial arch; plenty of hot fomentations to the abdomen. Suppuration sets in, and is often followed by sloughing of the skin over the abdominal muscles, which take a long time to heal.

Malignant Catarrh or Gangrenous Coryza of the Ox.

This disease is of rare occurrence in this country, but I have had six or seven cases in my district.

Symptoms.—A profuse discharge from the eyes and nostrils, accompanied with a fœtid smell, and with diarrhœa. In advanced cases the nasal mucous membrane sometimes sloughs off, and occasionally the breathing becomes difficult, and in some cases I have had to perform tracheotomy. It must be associated with some climatic influence, as it never occurs except in a sudden change of temperature, accompanied with hard winds.

Treatment.—Steaming the head three or four times daily, and injecting the nostrils with solution of boric acid and pot. chlorate. Internal medicine, quinine, sulph. and pot. iodid. I have also tried inhalations of oxygen with great success, especially when pneumonic symptoms develop.

Chronic Tympanites, Treated by Rumenotomy.

This is my *bête noire* in cattle practice. Formerly I tried nearly all the drugs in the "British Pharmacopœia," with very little good result, so latterly I have resorted to rumenotomy. In three cases I had the following results. The first subject was an 8-year-old cow. She was housed near the seashore. On operating I removed nearly a stone of sand from the rumen. This resulted from the mangolds she had eaten being pitted in sand, and not being properly cleaned before being given to her. The second case was a first-calf heifer. The disease was due to the ingestion of the placental membranes, which I removed from the rumen, and which was about the size of a small football. In the third case I removed a piece of an old frieze coat. Each of the above cases recovered, and I had very little trouble with the wound caused by the operation.

Snoring in Cattle.

This has latterly been very prevalent in my practice, and I think it is due to the introduction of the Aberdeen Angus breed, as cattle of this breed are more subject to it than others. Generally the noise comes on suddenly, and when first seen a displacement of the larynx is observed as if it was pressed downwards by the enlargement of the

retro-pharyngeal glands. I put a strong gag on, and examine the enlargement. When it proves to be an abscess it sometimes bursts on palpation, and I have no further trouble, but use a little antiseptic electuary for a few days; but when it consists of hardened tissue I generally advise the owner to fatten the animal for slaughter.

Subcutaneous Hæmatoma.

I have had several cases in cattle which for want of a better description I must name as above. The condition is as follows:—In the region of the pectoral or scapular muscles, there appears suddenly a large circumscribed swelling which resembles a superficial abscess at first sight, but on making an exploratory puncture nothing but arterial blood is drawn off. The contents of the tumour appear to be only blood. The swellings are about the size of a bowler hat. After a week or so the character of the contents changes to a darker colour, and becomes more like sanguineous pus.

If the tumour happens to be lanced, as one would do in the case of an ordinary abscess, severe hæmorrhage takes place. In one case to which I was called the steward had lanced the tumour, and on arriving I found the animal had literally bled to death.

The treatment I have adopted is to apply warm fomentations, followed by stimulating liniments, and in about a week's time to draw off the contents. It is sometimes necessary to pass a seton through the sac at a late stage. Under this treatment recovery is uneventful.

PERMANENT FIXATION OF A METALLIC TUBE IN THE URETHRA OF A DOG TO HINDER URETHRAL CONTRACTION AFTER URETHROTOMY.

BY PROFESSOR BASSI, ROYAL VETERINARY SCHOOL, TURIN.

On March 15, 1906, a gunsmith of Turin presented to the clinique of the school a young Italian pointer which was suffering from two fistulæ, situated a little beyond the ischiatic fossa, one on each side of the urethra. The dog often crouched to urinate, but he hardly succeeded in passing the urine drop by drop through the extremity of the urethra and one of the fistulous tracks.

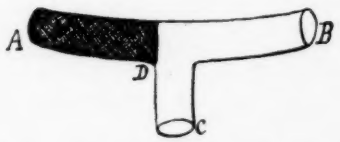
The patient had been ill some time, and had been given to the gunsmith to kill. Previously he had been operated on by a veterinary surgeon with the actual cautery for a tumour formed in the region of the fistulous openings.

Careful examination of the urethra by means of catheters and sound showed that it was almost entirely obliterated at its posterior extremity by a hard, resistant obstacle, on which the exploratory instruments impinged, and which *a priori* was supposed to be a calculus. Exploration of the two fistulous passages showed that one only, the right one, communicated with the urethra.

The next day I performed urethrotomy at the level of the posterior extremity of the os penis, where the presence of a calculus was suspected. It was then found that the obstacle was not a calculus in the peneal portion of the urethra, but was due to deformity of the short tract of canal of the os penis following fracture and dislocation

of its left margin towards the canal and subsequent consolidation. At the moment I thought that the fracture was due to an ordinary injury, but I knew nothing of the nature of the violence.

This uncertainly did not last long. I found under the skin of the internal face of the left thigh some number 4 shot, whilst two others came out of one of the explored fistula. It seemed certain that the fracture and lesions had been caused by a gunshot. Prognosis



Length of entire tube A B = 4½ cm.; length of emissary branch C D = 12 mm.; part of tube closed, A D; interior diameter of tube = 5 mm.

was grave, and the urethral contraction only appeared curable by establishing a fistula behind the obstacle, amputation of the penis behind the os not seeming to me convenient or opportune.

However, at this time I practised a second urethrotomy a little beyond the ischial fossa, between the orifices of the two fistulous tracks, with the view of allowing easy micturition, and of obtaining in a short time cicatrization of the fistulæ with the help of 3 per cent. lysol injections.

It may be noted that one has to surmount great difficulties when one wishes to keep a urethral fistula permanently open in the domestic animals; sooner or later retraction of the urethra supervenes, followed by grave dysuria. This trouble is mentioned by the great number of authors who have written on urethrotomy and urethral contractions. Professor Herturig, for example, writes that urethral contractions are notably produced by urethrotomy, and that as a general rule they cannot be radically cured.

Similarly Professor Möller notes that in urethral contractions the difficulty of urinating can, perhaps, be overcome by urethrotomy, but that afterwards fresh constrictions are produced.

In the present case it was necessary to maintain the urethra fistula, and to find at the same time a mechanical means capable of definitely hindering all eventual narrowing of the urethra. In casting about for means I remembered having read that veterinary surgeon Räber, had succeeded in maintaining dilation of the urethra by introducing an immovable tube of lead in the form of a T, and that Professor Vachetta had repeated the same operation on a dog. I resolved to try the introduction of a metallic tube into the urethra, and I had a silver tube constructed in the form of a T, which I applied on March 18. The introduction of the tube necessitated opening the wound towards the ischiatic fossa; after that the introduction appeared to me relatively easy by forced dilatation of the wound with the forceps. The tube was introduced into the urethra in such a way that the blocked part was directed towards the os penis, and the cross part towards the ischial curvature. One suture sufficed to keep it in place. The dog was liberated. He urinated for a

long time by the tube with a hind leg raised, as is the way with adult males, without a single drop of liquid escaping by the natural orifice of the urethra.

The two fistulous tracks were injected with lysol solution, and the two urethrotomy wounds disinfected twice daily with the same solution. A few days after the operation there was some dysuria. Seeking the cause of this it was perceived that the lips of the wound were tumefied and covered with fleshy fungoid granulations, partly obstructing the orifice of the tube. This accident was remedied by repeated cauterizations of the lips of the wound with lunar caustic. This complication would not have occurred if the emissary branch of the tube had been a ½ cm. longer. By the middle of April the dog was completely cured of the two fistulous passages, and the wound for the introduction of the tube.

The animal was in good condition, active and lively; he did not appear to experience any inconvenience. I saw the dog a long time after the operation at different times.

Suffice it to say that during the months of August and September, 1906, the animal did excellent service as a pointer; that in December, at the time of my examination, he presented neither tumefaction nor pain at the site of the tube, and urinated without the slightest difficulty. His general state was still the same after the 1907 season. From this experience I feel authorized in saying that a similar intervention to that described would be justifiable in the dog under favourable conditions, and also in the ox and horse; the end aimed at being to avoid urethral constriction, which renders the results of urethrotomy in veterinary surgery so illusory.

(*Revue Générale de Médecine Vétérinaire.*)

CHYLOUS ASCITES IN A CAT.

BY MESSRS. PRIME AND SONS, M.R.C.V.S., NORWOOD.

THE patient, a male cat, aged 9, had been castrated when young, and was generally a healthy, fat animal. When first seen by us the history was that it had been getting thinner for about three weeks, and exhibited the usual symptoms of abdominal dropsy. The patient increased so much in size during the month after we were called that the owner requested us to operate. On withdrawing the trocar, we were surprised to find that the fluid, instead of being straw-coloured, was like milk, and free from smell. We obtained about 1½ pints, which relieved the animal. A week later we removed about the same quantity, but the next day, pneumonia having set in, the owner had him chloroformed to death.

Unfortunately, a *post mortem* was not allowed by the owner, so that we could not tell the actual state of the abdominal organs.

A sow, of the big white variety, belonging to Mr. B. Chadderton, of Clayton Farm, Newcastle, has recently given birth to a litter of twenty-five young ones, seventeen of which survived. The same sow had already this year had a litter of seventeen young ones, thus having forty-two pigs in two litters.

Abstracts and Reports.

VIRUS FOR THE DESTRUCTION OF RATS AND MICE.

BY H. E. ANNETT, PROFESSOR OF COMPARATIVE PATHOLOGY, UNIVERSITY OF LIVERPOOL.

Kindly favour me with a small space in your columns to explain the true nature of the "Liverpool" virus for mice and rats, which, according to the editorial paragraph appearing in the Journal of October 31, p. 1394, is supposed to have been directly associated with an outbreak of illness in a business establishment in the city last July.

The virus is manufactured, under my superintendence, by the Incorporated Liverpool Institute of Comparative Pathology, founded for the furtherance of the study of comparative pathology in all its branches, and especially for research into the relation of the diseases of animals to those of man, and devoting any profits which *may* accrue from the sale of its commercial products to research in the subject of comparative pathology, which up to the present, no such profit accruing, has been assisted largely by donors and subscribers. The virus as issued by the Institute is certainly not a culture of the *Bacillus enteritidis* (Gaertner), nor can the "Danysz" bacillus in the form with which I have carried on extensive investigations, and as issued by Danysz Virus Company, Limited, London, be identified with Gaertner's bacillus.

The Danysz bacillus and the Liverpool virus bacillus were obtained originally from the intestinal contents of rats (the "ratin" bacillus, issued as a rat virus by the Ratin Company, London, was, I believe, isolated *from the urine of a child* by Neumann); and the virulence and efficiency as vermin killers of these original strains has been maintained for a period of six or seven years by suitable subcultures and passages through various animals.

These bacilli are members of a very large group of allied organisms, to which the name "Salmonella" has been given. In this group are included at present: The bacillus of hog cholera (Salmon and Smith); bacillus of swine fever (MacFadyean); *B. suipestifer* (Schütz); bacillus of *peste du porc* (Lignières); *B. paratyphosus* "B" of several authors (Brion and Kayser, Schottmüller, &c.); *B. icteroides* (Sanarelli); *B. enteritidis* (Gaertner); bacilli from various cases of meat poisoning (Van Ermengen, Aertryk, Trautmann, Günther, &c.); bacillus of psittacosis (Böhme); *B. typhi murium* (Loeffler); bacillus of rat virus (Danysz and others); bacilli of "Ratin" No. 1 (Neumann); bacillus of septicæmia of calves (Thomassen); bacillus of diarrhœa and dysentery of calves and other domesticated animals (several authors).

From a rough glance over this list, it will be readily perceived that the organisms are practically all of intestinal origin, and have a very extensive distribution in Nature. Observations tend to indicate that they are ordinarily harmless inhabitants of the normal intestinal tracts of man and animals; but occasionally, under circumstances at present but little understood, take on pathogenic properties, the manifestations of which exhibit a large degree of specificity, for the species from which the organisms were originally derived.

The differentiation of the members of this list into two groups, of which the *B. enteritidis* (Gaertner) forms the type of one, and the bacillus of hog cholera, or the *B. typhi murium*, may be taken as the type of the other, is not a very difficult task for any bacteriologist, by appropriate cultural, biological, and other methods; but to distinguish between the various members of these groups presents very considerable difficulty, and entails laborious and tedious serological operations.

Not having yet had the opportunity of perusing Professor Klein's report, nor the detailed account of his experimental work, I can only relate here those results which I have obtained from a very long and extensive experience with the Liverpool virus as have any bearing on the question of disease in the human subject produced directly or indirectly through the ingestion of this organism. I ought, however, first to mention that I have recently become aware of records of cases of meat poisoning in man by the use of cultures of the *B. typhi murium* (Loeffler), which have been "put down" for rats and mice in Japan and other countries.

I have records of cases in which the rat virus has been more or less deliberately ingested by adults and by children without the slightest deleterious effects; and in the six years during which the virus has been sold for the destruction of the vermin, in very large quantities (some 10,000 tubes per annum), and must have been handled on very frequent occasions in such a way as to be inadvertently and directly introduced into the mouth, I have received records of only two cases in which the virus was *suspected* of having been associated with any gastro-intestinal or other troubles. Careful enquiry into these cases was made, with the result that in one case the evidence was absolutely useless, and in the second case, the meat which was supposed to have conveyed the infection had been kept for several hours in evidently insanitary surroundings subsequent to cooking. In neither of these cases was any experimental evidence forthcoming.

From these cases, and probably from the circumstances of the present outbreak, it can be fairly inferred that due regard to ordinary common-sense sanitary precautions, in the preservation of meat and other foods, in pantries, kitchens, restaurants, and other places, would obviate any possibility (if such exists) of contamination with micro-organisms which may *perhaps* have a pathogenic action for man, but which have been found to be of very considerable benefit to mankind in general in destroying filthy verminous animals, whose very existence is a perpetual menace to the public health, especially of the inhabitants of large cities.—(*British Medical Journal.*)

IMPRESSIONS OF THE FIRST INTERNATIONAL FOOD CONGRESS.

BY LOUDON M. DOUGLAS, LECTURER ON THE MEAT INDUSTRY, EDINBURGH.

THE first Congress of an international character, which has just been held at Geneva, will be memorable because of the wide-spread interest it evoked. The idea of such a Congress has often been in the minds of those associated with food supply, but the standards vary so

much in different countries that at the outset it may be admitted that the difficulty of meeting upon some common ground has so far prevented international action. The value also of any resolutions passed must, for the greater part, be of an entirely academic character, inasmuch as it is clear that indiscriminate voting at such a Congress on any specific resolution must be unequal, and the nation with the preponderance of representatives present must control the issues.

To be of any value, therefore, such Congresses must appoint an equal number of delegates, who have power to vote, and might be arranged to protect the interests of minorities by giving them power to co-opt representatives from other nations, so as to equalize their voting power.

The Congress, which was held at Geneva from September 8 to 12 inclusive, under the auspices of the Society of the White Cross of Geneva, owes its origin to Frenchmen, and M. Ruau, the French Minister of Agriculture, attended its deliberations, and also outlined his own, and presumably his Government's, attitude in relation to the food supply. The fact that out of the 400 odd delegates present from all countries, some 250 were French, serves to illustrate the point that voting upon any resolution under such conditions, could not be described in any sense of the word as representative of international opinion.

The primary object which the Society hopes to attain is described in the title, which states that it exists for the repression of frauds in food and pharmaceutical preparations. With such a *rôle* it will be admitted that it has a vast field of activity before it, but the political element must be suppressed, otherwise it is quite clear that such a society may be made simply the tool of whichever country cares to exploit it the most.

There were twenty-nine different nations represented, but some of these had only a very limited number of delegates present, and many were quite unofficial, having come on their own initiative. This was noticeable with regard to the United Kingdom, which was not officially represented, although the Local Government Board had intimated that such a delegation would be sent.

The programme presented to the Congress was a large one, and dealt with many subjects in varying aspects, the discussions being largely made up of a mixture of science and commerce. The first day's proceedings were taken up with arriving at a definition of wine, but from the British point of view that is a subject which has only a local interest. The definition arrived at, however, may be of interest outside of wine-growing countries. Wine was defined as being, generally, the product of the alcoholic fermentation, complete or incomplete, of fresh grapes, or of the juice of fresh grapes. The signification of the definition lies in the fact that during recent years much sophistication has taken place in wines, more especially for export, with the consequence that the demand has gone down considerably, and overproduction has caused much depression in the wine districts of both France and Spain.

Vinegar was also defined as the exclusive product of the acetic fermentation of wine, but that is clearly a definition suited to France or Spain, and few other countries. Other definitions of an equally comprehensive character were given for cider, perry, beer, and liqueurs.

The second day was devoted to defining milk, butter, cheese, eggs,

fats used for foods, and various commodities associated with "charcuterie," which is in reality the business of pork purveying and the manufacture of pork products. With it, however, are associated preserved and other provisions.

The definition of butter proved to be the one in which most interest was taken, and the discussions regarding what pure butter really was, sometimes became very animated indeed. Finally, however, it was agreed that butter was a mixture of fatty matters exclusively derived from cows' milk after fermentation, and made either from whole milk, separated fat, or a mixture of both.

The use of preservatives in butter naturally occupied much attention, and while many of the French delegates opposed it, others as effectively supported it; and it was soon apparent that a large number, inclusive of the British delegation, were strongly in favour of a definition that boric acid preservative should certainly be allowed. Such opposition as exhibited itself seemed to be from a section which did not attempt to specify any objection from the point of view of health, but rather from the point of view that the use of preservative favoured the manufacturer, as distinguished from the farmer or the co-operative societies. No decision, however, was reached, and the whole question was postponed to a future conference, to be discussed under the head of "Manipulation."

The British section, through their spokesman, Dr. Tunnicliffe, pointed out that the descriptive text in which the attitude of the various nations to this matter was given, was entirely wrong in stating that the use of preservative in the United Kingdom was prohibited, and that, on the contrary, it was allowed by the responsible department of state up to ·5 per cent. A further discrepancy in this definition also appeared in the absence of any reference to the allowable percentage of water. On the whole, the matter was left in a very unsatisfactory condition, and it may be assumed that at the next Congress, the necessity for boric acid as a preservative in addition to salt, will not only be recognized as desirable, but will be declared to be essential in all butters which have to be kept for any length of time beyond two days.

Cheese was defined as being the product of whole milk treated in the usual manner, but, of course, such a definition can have no weight whatever. The milk from which cheese is made varies considerably, as does also the recognized fat contents of cheese, and it will need much greater precision in definition before a clear understanding can be arrived at. Eggs, again, were only entitled to be described as fresh when not submitted to any process of preserving, and oils and other fats did not attain any more definite descriptions. Frozen meat was placed in the category of preserved meats, a definition which will hardly be accorded general approbation, and sausages were only entitled to be described as "pure" when free from all other ingredients except meat, pork, or veal, in addition to the seasonings. They ought not to contain any greater percentage of moisture than the natural moisture of the ingredients. Of the other articles in the same class, none call for any special notice except salted meats, which were defined as being made from meats salted exclusively with commercial salt, with the addition of variable quantities of saltpetre and sugar. The inclusion of such a preservative as saltpetre may be regarded as indicating that the

principle of using other preserving agents besides salt is unavoidable, and in this connection the general opinion was that it will be found impossible to inhibit the production of certain ptomaines without the use of boric acid or other similar preservative.

On the whole, the first International Food Congress may be said to have been interesting as an opportunity for the exchange of opinions on many questions affecting the food supply, and the very inconclusiveness of the discussions would seem to demonstrate the necessity for better organization in the future. The Congress may be looked upon as being established, and is likely to continue from year to year. Possibly, it may be found practicable to invite the various national representatives to the United Kingdom, so that the British nation may also have an opportunity of witnessing in detail what precautions are considered necessary in the handling of food in other countries. It must always be remembered that we are more interested than other nations in this aspect of the question, as we are buyers of food supplies to a greater extent than any other.

It only remains to be said that the thanks of the Congress are due to the Secretary, M. Fazy, and the local Committee, for the excellent arrangements made. Thanks are also due to the University of Geneva for placing the rooms and hall of their classic institution at the disposal of the Congress. The ticket of membership carried the delegates to the Kursaal and *fete* at the Parc eaux-vives, arranged by the Committee of the Society of the White Cross of Geneva, and many other well-appointed functions.

As showing also the interest taken in the work of the Society, it may be mentioned that a princely donation of 100,000 francs was given by Madame Paul Bolo, and many others of a lesser amount have also been received. In so far as the British section is concerned, arrangements will be made in the future for a proper organization, and permanent secretaries will be appointed to represent the manufacturers and the scientific sections of the United Kingdom, so that the next Congress, which will be held in Paris next year, will be attended by a British delegation worthy of the subject.

CATTLE WARRANTY.

From the correspondence that has been published, it appears that the efforts to arrange a conference between the representatives of the butchers and agriculturists have so far proved unsuccessful.

The resolution passed by the Tuberculosis (Animals) Committee was to the effect that they considered it would be desirable for the National Federation of Meat Traders to withdraw their proposition to demand a warranty from farmers with a view to a conference for joint action for securing compensation from the National Exchequer, or otherwise settling the question. The Secretary replied that the Federation were willing to meet in conference representatives of the Committee, provided such conference were arranged for a date not later than the 26th inst. He further stated that the original resolution by the Federation to require the vendors' warranty on and after November 2 remained unaltered. This letter was submitted to the Chairman

of the Tuberculosis Committee, who expressed his regret that the Federation had been unable to agree to the suggestion that they should withdraw their demand for a warranty with a view to a conference. It was pointed out that the withdrawal of the demand for a warranty was the condition under which a conference was proposed, and that as the Committee had no authority from farmers throughout the country to come to an arrangement with the Federation on the matter, the conference suggested in their letter would not serve any useful purpose.

Unless, therefore, some unforeseen development occurs, it is to be feared that the struggle between the two parties will proceed. It can only be hoped that even yet an amicable arrangement on the subject may be possible.

The agriculturists' position is very well put in the resolutions adopted by the Gloucestershire Chamber of Agriculture. These were (1) "That, while sympathizing with the butchers in the hardship inflicted upon them by the confiscation of carcases affected with tuberculosis *bond-fide* bought at a fair market price and apparently healthy, this Chamber considers the proposal of the National Meat Traders' Federation to throw the whole responsibility on to the farmer to be unfair, and that farmers, although willing to consider any reasonable alternative proposal which shall throw the loss equitably upon the shoulders of those who ought in fairness to bear it, decline in the meantime to accede to the butchers' demands." (2) "That compensation to the butcher for confiscated meat should be paid, to the extent of at least one-half, out of the Imperial Exchequer."

Replying to a letter published in these columns, a correspondent, signing himself "Grazier," sends a communication giving his views of the case, First, as to the question that "no responsibility could or would be accepted by the vendor in the case of resale of the animal," he writes: "In the Midland counties during the winter months, when practically all cattle offered for sale are bought by dealers in Norfolk and the Eastern Counties, and then pitched in the different markets, the dealer re-sells the animal, and no compensation is to come from the feeder, as it is a case of re-sale." Then the cattle fed in the open on pastures during the summer months, and sold to the butcher, are to be open to compensation if sold straight from the grazier; yet the cattle have not run so great a risk of having contracted the disease whilst in the vendor's possession. As to marketing so-called "ne'er do wells" he says: "Butchers are not in the habit of buying this class of cattle at the ordinary price per pound, but at a very low value." As to the suggestion that the Government department responsible for the public health should go to the fountain-head and, if possible, trace the disease to its inception, our correspondent says this meets with full agreement in most quarters, provided compensation is paid. "From earlier remarks," he adds, "one gathers that bulls are supposed to be used for home purposes that fail to pass the test to go abroad, and one infers that disease originates in breeding. These diseases are probably prevalent in animals on their purchase by the grazier, who is unable to detect them. Then why should he pay compensation for diseases that arise from indiscretion on the part of the breeder? He cannot get the vendor to warrant them for the grazing season. Your correspondents hint that the vendor is afraid to guarantee an animal put on the market for human food. Certainly he objects to do so for

several reasons, but do not let the general public run away with the idea that he is aware that cattle are suffering from tuberculosis when he offers them for sale. One of his great objections to warranty is the identification of cattle after sale. Large buyers have a considerable number mixed up together during ten days, and mistakes might easily arise. Another objection is to warranting cattle with which he can get no warranty on purchase, and it is very probable the disease may then be present. Then why should the grazier pay for diseases which may be present on his purchasing the cattle?"

(*Daily Telegraph.*)

NOTES ON THE ORGAN-INCIDENCE OF CANCER IN DOMESTICATED ANIMALS.[1]

BY J. A. MURRAY, M.D., IMPERIAL CANCER RESEARCH FUND LABORATORIES.

THE study of cancer presents at the present day two directions which are not yet exhausted: the experimental study of malignant new growths, and the statistical investigation of the incidence of the disease. The histological analysis of cases of spontaneous cancer has apparently reached a natural end, and as was strikingly exhibited at the German Pathological Congress at Kiel this year, eagerly grasps at the tentative conclusions of experimental investigations to obtain new points of view. In the future the histological study of spontaneous cancer must more and more be limited to furnishing the crude data for statistical enquiries of various kinds.

In these circumstances what are the points of attack to which it is profitable to direct the attention of the veterinary profession with most prospect of furthering the solution of the essential problems of cancer, from a knowledge of which alone a rational treatment of malignant disease is to be expected?

It would be idle to propose an extension of the experimental study of cancer to the larger domesticated mammals as a profitable line of investigation. For the time being, the experimental study of cancer must be carried on in institutions specially devoted to it, by means of investigations on the malignant new growths of small mammals, and particularly of the mouse and rat. These investigations are costly both in time and money, and will probably become still more exacting in both respects in the near future.

The statistical investigation of cancer, on the other hand, is in dire need of the comparative control which an extended knowledge of the incidence of malignant new growths, in the most divergent animal forms, alone can give. The importance of accurate information as to the different histological types of cancer met with in different animals, and their relative frequency in different organs, is only now beginning to be appreciated. It is not so many years since the view was widely held that true malignant new growths did not occur except in the human race, and that the conditions identified as cancer in the domesticated mammals were in reality totally distinct, pathologically and clinically, from cancer as it occurs in man. Sir John McFadyean

[1] Read at the National Veterinary Association, 1908.

entered an energetic protest against this view, and showed that all the histological types of malignant new growths familiar to the student of human pathology were already recognized in several of the domesticated mammals, and particularly in the dog and horse.

Bashford and I were able to confirm and familiarize these conclusions at the Imperial Cancer Research Fund Laboratories, on the basis of material which we owe entirely to the generous and ungrudging collaboration of the veterinary profession of this country.

In spite of these facts it cannot be denied that the records of the occurrence of malignant new growths in the domesticated mammals is still regarded with a healthy scepticism by several writers on human pathology. It is especially with reference to the clinical course of the disease that the differences between cancer as it occurs in man, and as it occurs in other mammals seems to give rise to misgivings.

This is an attitude with which I must confess I have little sympathy. To anyone trained in the comparative method, these differences even when slight are of the highest interest, and it is difficult to comprehend on what general grounds it is incumbent on us to expect that all the mammals must conform in their biology exactly to the processes which have been observed in man. The practical identity of cancer in all its essential features throughout the vertebrates is all the more striking, and lends added importance to its comparative study.

Until recently the statistical investigation of cancer has been carried out along two independent lines. The statisticians have analysed the quota which malignant disease contributes to the general mortality of this and other countries, and have devised elaborate methods of actuarial correction, in order that comparisons may be made between the cancer mortality of different districts and countries, and between the records of the same country at different times. The clinicians and pathologists, on the other hand, have mainly concerned themselves with the relative frequency of cancer in the separate organs of the body, and when they have attempted to extend their conclusions to the incidence of the disease in the general population, have generally come to grief through ignorance or neglect of the actuarial corrections that are necessary.

In the last report of the Registrar-General for England and Wales the two methods have been combined for the first time. Dr. Tatham has compiled a table showing the proportion contributed by the several organs of the body to 10,000 deaths from cancer in the general population. This is one of the most valuable results which have ensued from the method devised, in consultation with Dr. Bashford, of recording the cancer mortality of the country with reference to the site of the disease, instead of in accordance with the clinical diagnosis. When Dr. Tatham's figures are compared with those obtained from hospitals, although the fact of varying frequency in the incidence of cancer on different organs is confirmed, the actual figures do not correspond closely. Thus, whereas cancer of the uterus is a more frequent *cause of death* than cancer of the breast, cancer of the breast is more frequent than cancer of the uterus as a *cause of admission to hospital*. Again, cancer of the penis and testis are relatively twice as frequent in hospital

cancer cases as in the mortality returns, and cancer of the lip is three times as frequent in 10,000 cases of cancer in hospitals as in the same number of deaths from cancer. There can be no doubt that a certain proportion of the cases operated upon recover completely, or die of intercurrent disease without recurrence. It is probable, however, that, *e.g.*, in the case of cancer of the uterus, a larger proportion of the cases are recognized at too late a stage in the disease, than is the case in cancer of the breast. This same factor of easy early recognition will obviously affect the relative proportion, say, of cancer cases of the lip or tongue and stomach, brought to hospital.

When we attempt to construct corresponding tables of the "organ-incidence" of cancer in the domesticated mammals, we recognize at once that a comparison with the mortality figures of the Registrar-General is out of the question. The preliminary data of total animal population, for example, of dogs or horses, are not obtainable, and still less is it possible to arrive at an estimation of the actual numbers of any one species of the same age or "age-constitution." Furthermore, the proportion of the two sexes in, *e.g.*, the total number of dogs in the country, is determined by other considerations than the numbers born. The death of domesticated animals also, is frequently not a natural one, and we must content ourselves with an analysis of the cases which present themselves for treatment or come to necropsy. Hence the relative liability of the several domesticated mammals to cancer cannot be compared. It is true that more cases are recorded from the dog and horse than from the cat, cow, pig, and sheep. The large proportion of cases from the cow in our material is entirely due to the extensive series of growths in this animal discovered by Mr. Trotter and generously brought to our notice by him. Very little reflection will convince anyone that the crude figures of total numbers of cases have a very slight value as indications of real variations. The general consideration that the numbers of each species from which the recorded cases are drawn, vary widely, shows that the number of cases can only by hazard indicate the relative frequency. In the case of the dog especially, the number of aged animals is greater as compared with the total number alive than is the case with any other domestic animal. This is a natural consequence of the close personal interest which dogs excite and respond to in this country. Since malignant new growths increase in frequency with advancing age, it is inevitable that a large number of cases should be recorded from the dog, an animal which is prized more highly in proportion to the length of time it has been kept. In addition, dogs are as a rule so docile and obedient that a thorough physical examination is easily carried out. The influence of both these factors, and particularly the latter, is probably responsible for the relatively small number of new growths obtained from the cat. Cats, especially when in ill-health, are not convenient animals to examine, nor is there the same desire to prolong their life when the accidents or concomitants of old age begin to impair their general health.

The horse is kept to an advanced age and is easily examined, whereas the cow in this country is fattened as soon as the reproductive powers begin to wane, and is slaughtered for food. Mr. Trotter has pointed out how an overwhelming proportion of his cases of malignant adenoma of the liver, and cancer of the stomach, adrenal, &c., were

obtained from extremely old Irish cows, the cow being kept for draught purposes in Ireland. The rarity of cancer in the pig is probably to be explained from similar considerations, only a very small proportion of the animals bred being allowed to attain late adult age.

Up to the present we have obtained specimens of sixty-four cases of cancer from the dog, twelve from the cat, sixteen from the horse, and thirty-four from the cow. While in the dog and cat one quarter of the tumours were situated in the mamma, only one of the thirty-four cases from the cow had attacked this organ, and in the horse no case has yet come to our notice. The only case of cancer of the uterus is from a cow, although several cases of carcinoma of the vagina and vulva have been obtained from the horse and cow. Fourteen sarcomata of the fore and hind-legs of the dog out of a total of sixty-four tumours again seems a very high proportion not encountered in the other animals, and the frequency of carcinoma of the liver in cows (nine out of thirty-four cases) in also unique. In view of the small numbers, these figures act more in whetting the appetite than by satisfying our desire for knowledge. The case of cancer of the mamma, for instance, tempts one to the reflection that its greater frequency in the dog and cat may be due to the artificial interruption to lactation that so frequently ensues on the violent death of their offspring at a tender age. Its occurrence in male dogs and its relatively still greater frequency in the mouse, however, in which this factor is conspicuously absent, indicate the necessity for caution in applying such considerations. Primary carcinoma of the liver in man is almost invariably associated with cirrhosis of that organ, but I have not been able to convince myself of such an association in the cases from the cow which I have examined. Carcinoma of the eyelids in horses and cattle very frequently takes its origin in the caruncula, or vestigial nictitating membrane. Loeb noticed its frequency in this situation many years ago in the cattle of the ranches in the Western States of North America, and spoke of its endemic occurrence.

The ascertained facts of the differences which subsist between the different races of mankind with respect to the relative frequency of cancer in different organs of the body, show how fallacious our conclusions may be as to endemic foci or epidemic occurrence of cancer. In Ceylon, nine-tenths of all cases of cancer are situated in or around the mouth. This is associated with the custom of the Singalhese of both sexes of chewing a mixture of betel-nut, slaked lime and tobacco. They even sleep with the plug in the mouth, and the malignant new growth develops at the exact point where the irritant is most constantly applied. In the same way the natives of Kashmir suffer to an exceptional extent from carcinoma of the anterior abdominal wall. This takes its origin in the patches of chronic dermatitis caused by the heat of a small charcoal stove carried under the clothes to maintain the body temperature. The association of cancer with these peculiar forms of chronic irritation is analogous to that of cancer of the scrotum with the occupation of chimney-sweeper or of paraffin-worker. An analogous association is seen in the case of cancer of the hands and fore-arms in aniline workers. No one has as yet propounded the view that cancer is endemic in paraffin oil works, or among chimney-sweeps.

In the domesticated mammals the same association with local

chronic irritation is met with in the brand-cancer of cattle, and "horn-core," which is an epithelioma of the base of the horn in Indian cattle, and always attacks the horn to which the trace is attached in draught animals.

The great variety of the forms of chronic irritation which appear to elicit cancerous proliferation shows that the chronic irritation is not the immediate cause of the new growth. It merely sets up changes in the tissues, on which, as a further cellular transformation, cancer begins. It is probable, however, that a systematic study of cancer in domesticated animals will furnish other equally striking associations of the origin of malignant new growths with chronic irritation. To further the accumulation of evidence on this point it is essential that specimens of new growths from animals should consist of slices taken through the growth and the adjoining normal tissues at right angles to the junction between them. Fragments from the growth itself without the surrounding tissues are of very limited value. As in the past, the Imperial Cancer Research Fund is desirous of accumulating material of this kind, and we are deeply grateful to those members of the veterinary profession who have assisted and still continue to assist us in this manner. The suggestion is, however, worthy of consideration whether the Veterinary Association might not with advantage undertake the systematic compilation of statistics on the "organ-incidence" of malignant new growths in the domesticated animals.

When the cases in man and animals in which the association with peculiar forms of chronic irritation is clear are put on one side, the remainder, comprising the majority of the cases, cannot be traced to any such agency.

The liability of grey horses to melanotic new growths has been frequently noted. They also occur in horses of other colour, and frequently remain circumscribed for a long time. Hence the opinion has been expressed that they are essentially benign tumours, but they may recur after apparently complete extirpation, and may produce metastases. I am inclined to regard the greater liability of grey horses to this form of growth as associated with the early degeneration of their pigmented cells. This is a normal alteration analogous to the whitening of the hair in man and animals with advancing age, and merely commences in greys at an earlier age. It may in fact be regarded as a precocious senescence of one tissue, and takes place by a cellular degeneration in which the nuclei of the pigment cells become smaller, and their chromatin forms large clumps instead of a fine reticulum. At the same time the brown pigment granules coalesce to form larger masses, and ultimately a small aggregation of three or four mutually flattened masses of pigment is all that remains of the cell. These are then taken up by phagocytes and transported to the lymph glands, so that in aged grey horses the whole lymphatic system, vessels, and glands, is mapped out by the contained black pigment.

This early senescence of the pigment cells usually runs an uneventful course, and it is only in a relatively small proportion that the process of involution is modified by the intrusion of malignant growth. This most usually involves the subcutaneous pigment at the root of the tail or in the neighbourhood of the external genital organs,

in which situations the pigment usually is best retained, even in advanced age. Whether the slowness of the involution process, or associated chronic irritation, is an important factor in initiating the cancerous transformation in this situation is difficult to determine, and might repay further study.

In another direction our investigations are largely dependent on the assistance and goodwill of veterinarians. This is in the matter of obtaining live animals suffering from spontaneous cancer. There are financial and other limits to the number of such cases in the horse and in cattle which it is possible to investigate, and in the case of the dog and cat sentimental considerations, which must be reckoned with, diminish the opportunities which might otherwise be available for objective study. As far as can be seen at present, neither of these considerations have such weight in the case of the fowl, which would in many respects furnish an ideal material for experimental study. Although the number of cases of cancer which have been recorded in birds is still small, this is probably to a large extent due to the absence of careful investigation and to the frequency of infective granulomata, especially tubercle. In any case we would particularly recommend our necessities in this direction to the notice of the veterinary profession, with the confidence born of past experience of an invaluable collaboration.

Review.

The Surgical Anatomy of the Horse. Part III. By J. T. Share Jones, F.R.C.V.S. Demy 4to. Pp. 220, with 8 coloured and 20 half-tone plates.

This is the third of the series of four volumes dealing with surgical areas, and it is devoted to the study of the hind limb, excluding the foot. In the first chapter an attempt is made to give a description of the superficial anatomy, indicating the position of the bony prominences and the muscles, and other structures which may be mapped out on the surface of the hind limb. To say that it is a difficult task to give such a description that will be intelligible is beyond question, but to attempt to do so without frequent reference to plates illustrating the points described is absolutely useless. That is the feeling which the reader must have at the introduction. None of the plates inserted illustrate clearly the points referred to in the description, and Plate ii. is nearly worthless. In the description of this plate certain errors are obvious. Thus the angle of the croup can be felt as "an osseous elevation." That prominence is never subcutaneous except in emaciated subjects. It is well clothed by the middle gluteus muscle. The tensor vaginæ femoris is described as a "delicate" muscle. That description can only be given to it when a great deal of its muscle tissue has been removed from it in dissection.

No indication is given as to whether the horse is in the standing position when the description is being made, but one is led to infer from some of the statements, *e.g.*, in directions to lift the limb, that the

animal is standing. If that is the case, then one must take exception to some points indicated. The patella is stated as forming a "prominence" in front of the stifle. If the author will take the trouble he may observe for himself that this prominence is not shown until the limb is picked up or the stifle-joint flexed. The position of the patella in the standing animal is represented by a transverse fissure a short distance below the fold of the thigh. Then, again, the "broad flattened tendon on the anterior aspect of the patella," referred to on p. 3, is not the tendon of the quadriceps muscle but is continuous with the fascia lata.

On p. 5 it is noted that the sartorius forms an elevation on the inner side of the thigh which runs downwards and backwards; that is not so. The sartorius is well covered with the thickest portion of the fascia on the inner side of the thigh, descending from Poupart's ligament, and the elevation referred to represents the anterior border of the gracilis.

On p. 7 the flexor accessorius is described as running almost vertically across the internal malleolus of the tibia in a faint depression. The flexor accessorius always lies behind the internal malleolus and never in the depression described.

In referring to the ridges and grooves noted on the inner side of the hock it is quite evident that the author is describing what one can see in the skeleton; not what is met with in examining the inner side of the hock of the living animal. The inner border of the scaphoid and cuneiform magnum, which is noted as forming transverse ridges with a groove between, are covered by the cunean tendon of the fleshy portion of the flexor metatarsi.

The extensor suffraginis of the forelimb is stated also to end on the second phalanx—an obvious misstatement.

In Plates iii. and v. a distortion of the limb has been produced. The straight ligament of the patella is shown as relaxed, a thing which never occurs in the normal limb of the living animal, and this necessarily detracts greatly from the picture as being a true representation of the position of structures in the living animal. The external saphenous vein is not represented in Plate iii. On p. 13 the sesamoid bones are said to be concealed from view by the broadened-out perforatus tendon and the lateral division of the suspensory ligament. As a matter of fact the perforatus tendon has nothing to do with the obscurity of the sesamoids; it is the reinforcing sheath of the flexor perforans tendon which makes them so ill-defined.

In Plate viii. very serious errors in the relations of parts have been introduced. This is a sketch of a transverse section of the hind limb through the seat of posterior tibial neurectomy. The very strong fibrous band in front of the gastrocnemius tendon and the retrograde artery is not represented, and the posterior tibial vessels appear to be related to the posterior tibial nerve, whereas they lie about 1½ in. in front of the nerve near the flexor accessorius, and bound down to it by the deep fascia of the leg which separated them off completely from the nerve.

In B portion of Plate xviii. a representation of the ligaments over the antero-internal aspect of the hock is given, but it is evident from the sketch that the ligaments have dried before the sketch was taken, which therefore does not portray the structures as they are found in the

living animal. Otherwise the grooves between the scaphoid, cuneiform magnum and large metatarsal bones would not be brought out in such relief.

Again, the posterior tibial nerve is said to lie under the deep fascia of the leg. As a matter of fact there are two layers of fascia: (1) the superficial, coming from the inner aspect of the tibia and fixed behind to the fibrous band in front of the gastrocnemius tendon; underneath this layer lies the posterior tibial nerve; (2) the deep fascia attached in front to the inner border of the tibia, closely applied to the flexor accessorius, flexor perforans, and popliteus, and covering the posterior tibial vessels. This fascia separates the latter vessels from the nerve of the same name. That is an important surgical point which is omitted altogether in the description.

Altogether, with the exception of the sketches of bones, the plates are only fair, some of them absolutely useless. The descriptions given in the anatomical part of the work leave the reader no wiser than he was after having read any of the text-books on general anatomy, and the surgical diseases and their treatment are more appropriately dealt with in any of the text-books on surgery pure and simple.

The publishers, Messrs. Williams and Norgate, London, have done their work excellently.

Personal.

Dr. T. G. Brodie, F.R.S., &c., Professor of Physiology at the Royal Veterinary College, London, has been appointed to the Chair of Physiology at the University of Toronto, and has left England to take up his new duties. Before leaving, at a meeting of the Physiological Society, held at Guy's Hospital, Dr. Brodie was presented with a token of good wishes for his success in the "new world" by his colleagues at the various medical schools with which he was associated.

Dr. Buckmaster, of the Physiological Department of University College, has been appointed Professor of Physiology at the Royal Veterinary College, London, in succession to Dr. Brodie, F.R.S.

The Nobel Prize for Medicine will this year be divided between Dr. Metchnikoff, of the Pasteur Institute, and Professor Paul Ehrlich, of Frankfurt-on-Main, states the Paris *Gaulois*.

Translations.

PLEURO-PNEUMONIA DUE TO A FOREIGN BODY.

BY MM. GENOT AND MAHIA, ARMY VETERINARY SURGEONS.

An Irish mare affected with sinusitis was trephined in the frontal sinus and left superior maxillary sinus. Astringent solutions were injected and returned by the nostrils. The invalid resisted greatly, and it was noticed at the end of some days that she swallowed almost the whole of the liquids injected.

To avoid an intoxication and to prevent swallowing, the tongue was drawn across the mouth. For some days all went well, but after dressing, the mare suddenly presented alarming symptoms. She breathed noisily, gave way on her hocks, was covered with sweat, and had violent fits of coughing. Two per cent. cresol injected into the sinuses had been swallowed, and had gone the wrong way (to the lungs). Five litres of blood were abstracted; a sinapism was applied, and alkalines and citrate of caffeine administered. During the following days gangrenous pneumonia was expected, and the following treatment given: Chest re-stimulated, expectorants, diuretics, and alkalies administered in the form of electuary. At the end of fifteen days evident symptoms of pleurisy appeared. Thoracentesis confirmed the diagnosis. The liquid extracted by puncture every four days soon became purulent, and the mare died.

At the autopsy 30 litres of turbid serosity were found in the thoracic cavity. It had the nauseating odour of rotten eggs, and there were some fibrinous (omelettes) several centimetres thick. Lungs gorged with blood. MM. Genot and Mahia write: "(1) This shows the danger that there is in hindering deglutition of liquids in the horse, not only during the administration of drinks, but at any time. (2) It gives us the evolution of a pleuro-pneumonia by a foreign body in the lungs, the customary result being gangrenous pneumonia.—G. M.

(*Annales belges ex Le Bulletin Vétérinaire.*)

A CASE OF GLANDERS INFECTION ENDING IN CURE.

Dr. Aranov, in a medical reunion at St. Petersburg, stated that a veterinary surgeon engaged in a laboratory pricked himself in the finger with a needle filled with glanders virus, and took no notice of it at first. Later an incision had to be made to the right of the point of puncture and ablation of the infected lymphatic glands practiced, but the illness was not stayed. It showed itself by the production, at different points, of swellings containing glanders bacilli. Part of the affected finger was amputated, yellow precipitate ointment applied, and iodoform to the interior. Abscesses formed in different parts of the body, in the pus of which the specific microbe was found. The illness lasted a year and a half. It would seem that in a similar case one should resort to good opening up of the seat of infection, and radical ablation of the corresponding lymphatic glands.—G. M.

(*Le Bulletin Vétérinaire.*)

FIG. 1.—Microscopic view, natural size.

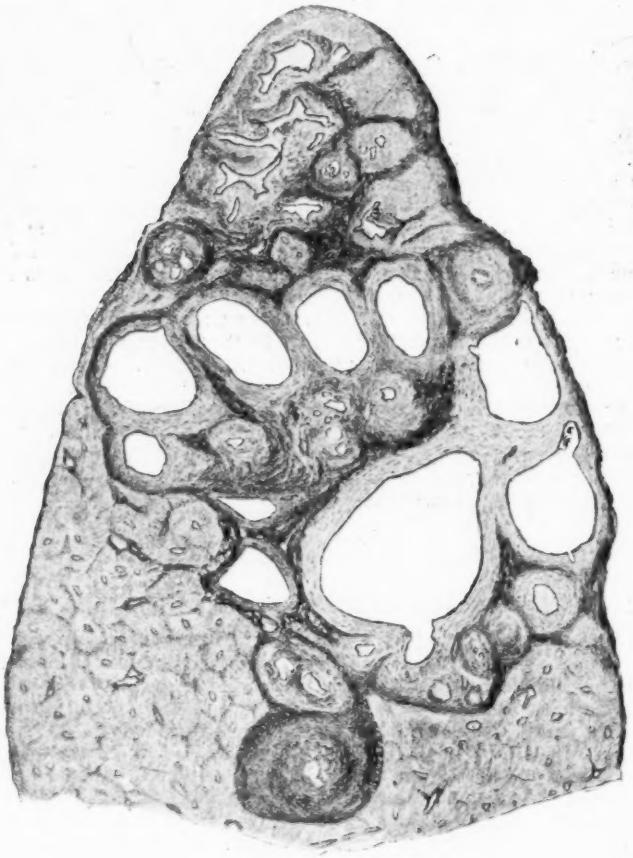


FIG. 2.—Section of tumour, microscopic view.

REAL GALL-DUCT ADENOMA IN THE LIVER OF A CALF.

ADENOMA OF THE GALL-DUCT (ADENOKYSTOMA) IN THE LIVER OF A CALF.

BY JOEST

THE liver of a calf about 14 days old showed at one place a formation as illustrated (fig. 1). One sees in it a thick conglomerate vesicle with grains about the size of a pin's head filled with clear fluid. The whole formation was about the size of a pea. The formation gave me the impression of a young multilocular echinococcus.

Histological examination (fig. 2) showed many large cystic cavities lined with cubical epithelium. The cavities were crossed by numerous elastic threads of connective tissue. Few round cells were found in this tissue, and no eosinophile cells.

The structure was a new formation of the gall duct, and therefore a tumour which may be called adenoma of the gall duct, or better still, adenokystoma of the duct. This is a real gall duct adenoma, and not one of the frequently occurring chronic inflammatory processes in the liver, which result in the growth of little gall ducts which thicken and lead to chronically inflamed tissue formation, and which are called adenomas.—G. M.

(*Bericht Tierärztliche Hochschule zu Dresden.*)

A CASE OF POUCHING OR DISTENSION OF THE ŒSOPHAGUS IN THE HORSE.

BY MM. GROSJEAN AND LESBOUYRIES, VETERINARY SURGEONS IN THE 9TH CHASSEURS.

A HORSE was taken with acute colic, abundant salivation, and frequent rumblings. It was thought to be due to gastric indigestion, and suitable treatment was given, and the horse recovered.

Six months after, the same kind of trouble arose, but more grave, violent colic, which ended after rejection by the nostrils of alimentary matter which had not been subjected to digestion, deprived of gastric odour, and got rid of after a short stay in the stomach. It was believed to be due to rupture of the stomach, but the horse got well, and so œsophageal distension was suspected. A rigid diet was prescribed—gruel, hay and straw chop, crushed oats. From time to time some disturbance was noted, œsophageal indigestion due to errors in diet. At the end of the third year, during which the horse had been attended several times, he had an acute crisis; in the course of vomition he was taken with violent fits of coughing, and succumbed to broncho-pneumonia.

At the autopsy, lesions of broncho-pneumonia were found, especially in the right lung. The pouch was found, not in the thoracic cavity, but in the abdominal cavity just in front of the stomach. Its walls were composed of a mucous membrane altered by numerous and deep ulcerations, and a thin serous, and no muscular layer. The lesion represented a hernia of the mucosa through the muscularis.

(*Revue de Toulouse et Le Bulletin Vétérinaire.*)

EPITHELIAL CANCER OF CAUDAL ORIGIN IN A COW.

BY PROFESSOR MOUSSU.

A NORMANDY cow, aged 12, ready to calve, presented, at the extremity of the tail, a verrucose-like wound enveloping all the stump, and looking like a large cutaneous papilloma. Below this region the organ had its normal aspect; but two other prominences were visible, quite verrucose-like, sessile, and indurated at the base—one situated at the inferior and middle third, and the other at the root of the tail. These lesions had appeared successively in a month and six weeks time, and each day showed them peripherally progressive in their growth. The veterinary surgeon consulted—M. Mondine, of Ontarville (Loiret)—practised amputation of the tail.

Specimens were sent to the Alfort School and examined by M. Germain, who found them to be epithelial cutaneous cancer.

The operation wound cicatrized well. Foreseeing a generalized attack, M. Mondine advised slaughter. But the cow had calved, and before parting with the mother it was desired to rear the calf.

Six weeks after the operation alarming symptoms appeared: the appetite diminished, uneasy movements behind, the croup slightly deformed. The beast was sent to the Alfort School, where she arrived weak and exhausted. The next day she was paralyzed, and so became a subject for surgical exercises.

On the left side the croup had taken on the aspect of a segment of a sphere, perfectly regular and rounded; there was slight, but deep, fluctuation. The corresponding posterior limb was engorged in complete extension, and impossible to flex, even mechanically.

At the *post mortem*, all the viscera were normal, but the roof of the pelvis was formed by an enormous neoplastic mass. The left region of the croup showed a very voluminous tumour, softened and mortified in its centre, enclosing greyish-red putrescence, in which could be seen pieces of necrosed muscle. The opening of the rachidean canal showed no neoplastic invasion, nor compression of the cord; but all the veins were thrombosed, which explained the paralysis. All the deep veins of the thigh and buttock were greatly dilated and thrombosed, hence engorgement and functional impotence of the limb.

M. Moussu draws attention to the rapid development of the lesions, which might not be recognized in their gravity towards the end.—G. M.

(*Recueil d'Alfort ex Le Bulletin Vétérinaire.*)

POISONING BY CLOVER SILK (*CUSCUTA TRIFOLII*).

BY HEINRICH HOLTERBACH, VETERINARY SURGEON OF OFFENBURG (BADEN).

THE Cuscuta tribe belong to the winding parasites, which are generally devoid of green leaves and chlorophyll. From their "germinating seeds a threadlike stalk arises, which by peculiar movements comes in contact with the host plant, encircles this and throws out sucking tubercles through which the parasite takes up nourishment from the plant attacked." The plants attacked belong, in Europe, almost without exception, to the shrubs and herbs, but under these

the parasites are difficult to uproot, extremely tenacious of life, and occasion such injury that they have occupied attention and been held in bad repute from early days by agriculturists. Of the worst reputation with us, at least, is clover silk (*Cuscuta trifolii*); it will not only injure clover fields, but at times destroy the domesticated animals. Still, such occurrences appear unfrequent, or, on account of further propagation of clover silk, are probably seldom noticed. In Fröhner's Toxicology I only find one case from Mid-Prussia in 1872, where five swine from 3 to 5 months old were fatally affected. Therefore I am relating the following case:—

In E., farmer F. R. had given to his cows second crop clover, because of the unfavourable spring weather. This was not Swedish clover, but *Trifolium palatense*. To save time on account of press of work, the racks were filled and the animals left without further attention. The clover came from a meadow which was affected with clover silk, but which had grown in profusion at one spot. The cows were well nourished, well fed, and cared for. One was a cross between a Simmenthaler and a grey hill cow, aged 7, and not in calf; the second, of Simmenthal breed, was in the second third of pregnancy; two young cattle of 9 and 7 months old completed the occupants of the shed. None of the animals had been ill during the year; they all took the clover well, and seemed to thrive on this exclusive diet. In the middle of the week at evening the cow of the cross-breed had a failing appetite, which was all the more noticeable, as she was generally very eager for her food. The remaining animals were apparently healthy. On Thursday the racks were filled with clover, as much as the cows could eat, and they were left.

At 2 o'clock in the afternoon the trouble began. The cross-bred cow was the first to be attacked, and showed the following symptoms, which were typical in all four animals:—

One hind limb was feebly drawn forward, so that the claws were about 15 cm. from the ground. Then there was a trembling movement of the hind quarters lasting about five minutes, whilst the muscles above the hock joint swelled slowly until they were as thick as one's thumb, rounded in shape, and hard to the touch. The back was arched, the head held outstretched; she had an anxious appearance; her breathing was quick; at the loins, croup, flank, and shoulder muscular tremors, which grew in intensity, appeared, and at the same time cramp in the quarters. In the sacral region the skin was hot, the remaining parts of the body warmer than normal, and damp. Then began violent shaking movements in which the hind feet alternately took part, which increased until the patient was in a frenzy and greatly disturbed. After a quarter of an hour all the symptoms declined, and the animal stood exhausted and covered with sweat, quietly chewing her cud. Ten minutes later all trace of the attack had disappeared, and dung and urine of normal appearance were passed in the normal way. Peristalsis of the stomach and intestine was quicker, but not as much as might be expected from the extraordinary degree of unrest. Conjunctiva slightly reddened, sclerotic not coloured.

Scarcely had this subject recovered when the second cow had an attack, and then the two young cattle. In the first cow, after one hour's pause, four such attacks were witnessed; in the second only

two, and the young cattle had one each. The attack was the most severe in the youngest cow, and continued the longest in her, and those in the first cow were the least severe. All the animals recovered quickly, and remained healthy.

It can only be concluded that these symptoms arose from some injurious substance taken in the food. The latter consisted only of clover and water, and the water was all right. So the cause could only lie in the clover. It was examined in the barn. There was no fermentation in it. It was, however, mixed throughout with clover silk, and in some samples there was 50 per cent. of it. I therefore think I am justified in attributing the poisoning to *C. trifolii.*

Of the elements of this parasitic plant we know little. We know cuscutin and convolvulin, which form the chief constituents of the real jalap root. They do not help us much. The drastic purgative effect of convolvulin was not noticed in these cases. The chief effect witnessed was that on the muscular system, which stood out prominently. Clover silk is employed as a remedy in all possible complaints —a proof that it would not seem to contain any very powerful constituents; otherwise its effects would probably have been noticed and investigated.

[The tribe to which this plant belongs is familiarly known here as dodder.—*Translator,* G. M.]

(*Deutsche Tierärztliche Wochenschrift.*)

A HITHERTO UNRECORDED VESICULAR CHANGE ON THE CONJUNCTIVA BULBI OF THE HORSE.

BY E. MESSNER, VETERINARY SURGEON.

THE subject of this note was a five-year-old dark brown gelding, well-shaped, and in good condition. Both eyes were of equal size, and opened correctly physiologically. On the conjunctiva bulbi, besides the change to be mentioned, there was redness of the inside of the eyelids, with a discharge of catarrhal conjunctivitis. At the inner canthus of the *right* eye were some granular clusters about pea-size, evidently the result of cystic degeneration. On examining the eye with the ophthalmoscope one could see three brown spots on the lens, which in the failing light looked black. Whilst these changes were situated on the outer surface of the lens, deeper in under the lens capsule were two or three short streaks over one another in three groups. These appeared light grey in colour.

At the *left* eye on the lens, almost in the middle, under the iris edge, was a little brown speck about 1 mm. in size. Similar grey-coloured streaks to those in the opposite eye were also visible. There was a granular cystic cluster, with minimal opacity of the lens, and round, oval or pear-shaped vesicles in the membrane of the bulbus, 1 mm. or a fraction less in size. These vesicles were little raised above the normal conjunctiva, smooth and glistening, their wall was clear and transparent, and their contents a clear watery fluid. An looking closely one or two of the vesicles seemed to have a pigmented

base. They were in single and double rank, and five or six in number on the outside of the palpebra tertia. It is worth noting that both eyes showed these vesicles. We have looked through literature, but can find no account of a similar affection.—G. M.

(*Deutsche Tierärztliche Wochenschrift.*)

NUCLEIN AND NUCLEINATES IN THE TREATMENT OF INFECTIOUS DISEASES OF ANIMALS.

For some time medicine has sought to draw inspiration from a therapeutic agent whose chief object is to stimulate hyperleucocytosis. The principle of "pathogenic methods" has been known and used for a long time in animal medicine. Without tracing the origin of setoning which we have inherited from old time farriers, we utilize the fixed abscess whose influence in infectious maladies appears to be connected intimately with a leucocytary process.

Whilst seeking to gain knowledge of the products which suit each infection best, we can even now discuss the action produced by nucleinic acid and nucleinates.

The recent researches of Herbaczinsky and Vaughan determine the very remarkable properties which nuclein possesses of exciting phagocytosis.

Mickuliez, of Breslau, has shown that animals in which nucleinate of soda was injected were forty times more resistant to coli-bacillary infection than other animals.

In 1904, Drs. Huchard and Mougeot have only praise for the employment of nucleinate of iron and soda in several cases of typhoid fever, of a dynamic pneumonia, and in all cases of denutrition and grave anæmia.

Dr. Faucon, in 1906, as the result of his experiences, recommends the practice of a subcutaneous injection of nucleinic acid in abdominal surgery to increase leucocytosis and resistance to illness.

On June 10, 1907, Chautemesse and Kahn made a communication to the Academy of Medicine relative to the infection of sick people suffering from typhoid. They favour hyperleucocytosis by the same means of subcutaneous injection of nucleinate of soda.

Quite recently the question of phagocytes has been the order of the day. Communications made to the Biological Society by Dr. Doyen, recommend the employment of the stimulants of leucocytosis to the infectious illnesses of men and animals. The use of pathogenic products will be indicated, not only to confer immunity against a certain number of pathogenic microbes, but also to combat slight infections and the great number of latent auto-intoxications.

Whilst awaiting the results of current researches, we can say that the stimulant products of leucocytosis may be injected subcutaneously or by the buccal passage, and that they considerably increase organic resistance.

Amongst the infectious diseases of animals two stand out prominently as suitable for the trial of this medication; we refer to pasteurellosis of the horse and distemper of the dog. In these acute or chronic affections defensive cellular reaction tends to bring

about immunity; it is quite logical, therefore, to seek to stimulate this immunizing process. One knows, for example, that the youthful illnesses of the canine species represent a serious crisis to which few subjects escape paying tribute. If street dogs generally show much resistance, it is not so with those belonging to well-to-do people (greyhounds, Danes, Newfoundlands). As for house-dogs, they succumb, according to Nocard, in the proportion of 60 to 80 per cent.

What strikes one is that individual predisposition is extremely variable. Among animals under similar conditions some succumb, whilst others are only subject to slight troubles. These facts taken together show the necessity of trying to increase the organic resistance of all housed animals, or after illness. We know that judicious feeding with an organic food having nuclein as a base has a remarkable anti-infection action, and that this may, perhaps, be increased by subcutaneous injections of nucleinate of soda. Administered as an economic food, as a regenerator of the blood and nervous systems, or as an anti-infection remedy, nuclein furnishes results which cannot escape the attention of veterinarians.

Once more animal medicine, and especially canine, may benefit by a method of treatment which will, perhaps, only take its place slowly. (Nuclein may be obtained from M. Lavocat, rue Thomassin No. 33, Lyon.)

(*Ex Le Bulletin Vétérinaire.*)

Correspondence.

THE NINTH INTERNATIONAL VETERINARY CONGRESS AT THE HAGUE.

SEPTEMBER, 13—19, 1909.

To the Editors of the VETERINARY JOURNAL.

Sirs,—The Executive Committee begs you to insert in your Journal the following particulars:—

The Congress is expected to be very animated, as it may be inferred from the communications the Committee received respecting this from almost all parts of the world. Besides, the National Committees formed in different countries, show the great interest everywhere taken in the Congress; also, the interests of the Congress are supported in a high degree by the members of the Permanent Commission and by the different veterinary periodicals.

The two circulars regarding the Congress, which have been distributed in large numbers, will be followed by a third one, which, however, will be sent only to those persons who will have been enregistered as members of the Congress at the office of the General Treasurer, Professor D. F. van Esveld, of the State Veterinary School at Utrecht. The latter circular will contain the names of the members of the Permanent Commission, supplementary information regarding the National Committees, the names of those who will read papers on subjects to be treated at the Congress, and any

other communication which the Executive Committee will deem necessary.

Those, also, who wish to be informed about the further preparation of the Congress are recommended to apply for membership to the General Treasurer, paying an amount of 17s. They will receive in return a member's card and a plan of the statute of the Congress, and later all the publications of the Executive Committee.

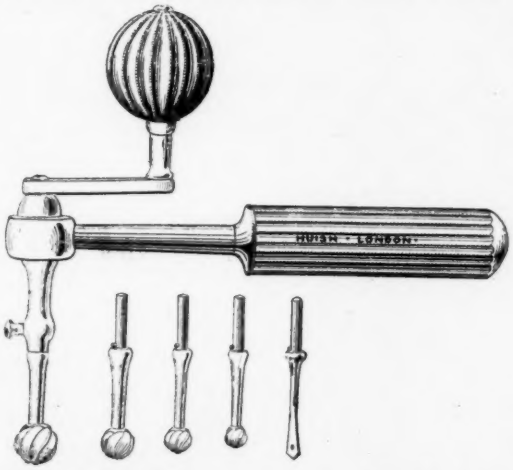
For the Executive Committee,

D. A. DE JONG,
General Secretary.

Leyden (Netherlands), 20, Maresingel.

To the Editors of the VETERINARY JOURNAL.

SIRS,—Although appreciating the farriers' old foot searcher for forty years, I have been induced to invent an instrument which would surpass its merits for searching horses' feet where pus is imprisoned. Consequently, I asked Messrs. Huish and Co., Red Lion Square, London, to manufacture for me an instrument which would prove very useful to the veterinary profession, with the result that they



have produced a hoof drill (from my pattern) which, in my opinion, does them great credit.

The illustration shows the simplicity, and a trial of the instrument will prove its practical value when lameness is present, arising from suppuration, such as "suppurating corns," "gathered nails," suppuration from "bruised soles," "pricks," &c.

With suitable bits this instrument can not only be used as a hoof-drill, but useful with a tracheotome (*vide* No. 1707, p. 119, Messrs.

Huish's Catalogue), bone drill, trephines, adjusting sandcrack nails, and numerous other operations.

I hope that veterinarians will give this instrument a trial, when I feel confident that it will prove an acquisition in their hands, as it has done in mine.

SEAWARD LONGHURST, F.R.C.V.S.
Lieutenant-Colonel.

The Chestnuts, Ashvale, Surrey.
November 9, 1908.

Books and Periodicals, &c., Received.

Bulletin of the North Dakota Government Experimental Station; Journal of the Royal Army Medical Corps; Journal of the Incorporated Society for the Destruction of Vermin. Part I., Vol. I. To be published quarterly. Price 1s. Bale, Sons & Danielsson, Ltd.; Transvaal Agricultural Journal; "Ticks: A Monograph on Ixodoidea." Part I., Argasidæ, by Nuttall, Warburton, Cooper, and Robinson. Published at the Cambridge University Press. 5s. net.

Letters and Communications, &c.

London M. Douglas; R. Rutherford; Professor Craig; Guy Sutton; Noël Pillers; E. Belcher; J. F. Healy; Lieut. A. J. Thompson; Board of Agriculture and Fisheries; Department of Agricultural and Technical Instruction for Ireland; University of London.

NOTE.—All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C. Telephone, 4646 Gerrard. Telegrams, "Baillière, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements), should be addressed to the Editor.

Manuscript—preferably type-written—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown on white paper or card.

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